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ABSTRACT

This report presents the analytic plan for a study of demonstration Title I projects. The study is to be one of distributional equity: what kinds of instructional services are received by what kinds of students. It is mandated by the United States Congress and will provide the basic analysis for possible modifications in the Elementary and Secondary Education Act. The report is organized into three parts. Part I contains an overview of the background and objectives of the research, including: the Congressional mandate; the overall National Institute of Education compensatory education study plan; the background to the 16 demonstration districts; and the objectives of the demonstration study. This section also introduces the general study design, including: primary research questions; the analytic model; the sampling plan; and levels of generalization for the demonstration study. The analytic model serves as the basic outline for Part II, where each variable group (except two, which are combined) is discussed as a separate analytic topic. Each group is addressed in terms of: research objectives; data source and variables; and analytic procedures. Links between variable groups are also discussed, and in the final chapter of this section the approach to cost analysis is presented. Part III summarizes the purpose and scope of future study reports. Particular emphasis is placed on the outline and staging of the projected first annual report. Six appendices present technical material, including: (1) a statement of the evolution of the design; (2) summaries of the 14 formal instruments used in the study; (3) possible problems in design implementation, with implications; (4) data collection procedures, quality control, and confidentiality; (5) data base organization; and (6) reliability assessment of the Classroom Activities Log. (Author/RDN)

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RESEARCH ON DEMONSTRATION
TITLE I COMPENSATORY EDUCATION PROJECTS

ANALYSIS PLAN
Volume I

April 7, 1976

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RESEARCH ON DEMONSTRATION TITLE I COMPENSATORY EDUCATION PROJECTS

ANALYSIS PLAN
Volume I

April 7, 1976

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TABLE OF CONTENTS

Page

1.0 ABSTRACT 1
    1.1 Purpose of this Report 1
    1.2 Summary of this Report 2

2.0 BACKGROUND AND OBJECTIVES OF THE RESEARCH 4
    2.1 Legislative History and the Congressional Mandate 4
    2.2 This Study Within the NIE Matrix 7
    2.3 The RFP for School Districts, Their Proposals and Those Selected 14
    2.4 General Study Objectives 23

3.0 GENERAL STUDY DESIGN 25
    3.1 Primary Research Questions 26
    3.2 Details of Study Design 29
        3.2.1 The Analytic Model 29
        3.2.2 Levels of Generalization 37
        3.2.3 Sampling Plan 41

4.0 THE CONTEXT 71
    4.1 The Setting 73
    4.2 The Application and Planning Process 81

5.0 ALLOCATION POLICY 86
    5.1 Dimensions of Allocation Policy 87
    5.2 Research Objectives and Analytic Procedures 95

6.0 PROGRAM DELIVERY 101
    6.1 Program Descriptions 104
    6.2 Services Delivered by Instructional Specialists 116
    6.3 Distribution of Programs Across Schools 124

7.0 CHARACTERISTICS OF STUDENTS SERVED 136
    7.1 Research Objectives 137
    7.2 Design 140
    7.3 Data Sources and Variables 143
    7.4 Analtyic Procedures 147

8.0 STUDENT EXPERIENCES 149
    8.1 Research Objectives 150
    8.2 Sampling Design 151
    8.3 Data Sources and Variables 154
    8.4 Analytic Procedures 165

Page

9.0 COMMUNITY RESPONSE 173
- 9.1 Parent Response 176
- 9.2 PAC Response 186
- 9.3 Citizen Response 189

10.0 ANALYSIS OF SYSTEMIC RELATIONSHIPS 191

11.0 ANALYSIS OF CHANGE IN SYSTEMIC RELATIONSHIPS 199
- 11.1 Changes in Relationships 201
- 11.2 Relationships Among Changes 203

12.0 COST ANALYSIS OF TITLE I DEMONSTRATION PROJECTS 206
- 12.1 Design of the Cost Study 207
- 12.2 Building a First-Approximation Cost Analysis Model For An Illustrative School District 209
- 12.3 Requirements of the Cost Analysis 217

13.0 GENERAL OUTLINE OF PURPOSE AND SCOPE OF FUTURE REPORTS 224
- 13.1 Reports and Audiences 224
- 13.2 First Annual Report 226

1.0 ABSTRACT

1.1 Purpose of this Report

This report presents the analytic plan for Abt Associates Inc. (AAI) Study of Demonstration Title I Compensatory Education Projects. This is a study of distributional equity: what kinds of instructional services are received by what kinds of students. It is mandated by the U.S. Congress. It will provide the basic analysis for possible modifications in the Elementary and Secondary Education Act (ESEA).

In responding to the Request for Proposals for this study from The National Institute of Education (NIE), Abt Associates Inc. described its plans for the analysis of data. These preliminary plans have been modified and expanded based upon the following inputs:

- Receipt of final planning year proposals from each of the 16 Demonstration Districts,
- The proceedings of an August 1975 consultant conference in which certain arguments were made by AAI, in concert with NIE and consultants,
- Design modifications suggested by NIE in October 1975 and subsequently accepted by AAI,
- Development of data collection instruments and sampling rules based upon the preceding elements.

The purpose of this report is to summarize AAI's current analytic plans, which represent the synthesis of these several inputs. These plans, of course, are subject to change based upon response by the Demonstration districts to various instruments and other presently unknown factors, such as district attrition.

1.2 Summary of this Report

The report is organized into three major parts:

I. Introduction (Chapters 1-3)
II. Analytic Topics and Procedures (Chapters 4-12)
III. General Outline of Purpose and Scope of Study Reports (Chapters 13-14).

In addition, there are several appendices which deal with technical considerations underlying our approach; instrumentation, data collection, and data base organization; and the legislation underlying the Study.

In addition to this abstract, Part I contains an overview of the background and objectives of this research, including:

- The Congressional mandate,
- The overall NIE study plan,
- The background for the sixteen Demonstration districts, and
- The objectives of the Demonstration Study.

Part I also introduces the general study design, including

- Primary Research Questions,
- The Analytic Model,
- The Sampling Plan, and
- Levels of Generalization for the Demonstration Study.

The Analytic Model serves as the basic outline for Part II. Each of the variable groups presented in the model (with the exception of Setting and Application/Planning which are combined) is discussed as a separate analytic topic in Chapters 4 through 9. For each of these variable groups, the following points are addressed:

- Research Objectives,
- Data Sources and Variables, and
- Analytic Procedures.

In addition, links between variable groups are addressed in Chapters 10 and 11. Chapter 10 discusses analysis of cross-sectional relationships among variable groups, Chapter 11 discusses analysis of changes in relationships over time. Finally, Chapter 12 presents our approach to cost analysis, an analytic topic that crosses several variable groups in the model.

Part III of this report summarizes the purpose and scope of future Study reports. Particular emphasis is placed on the outline and staging of the first annual report.

2.0 BACKGROUND AND OBJECTIVES OF THE RESEARCH

This research is primarily a study of distributive equity. It is designed to answer the question: How much and what kinds of educational services reach what kinds of students? This question is studied broadly in terms of all services received over the course of a year by students, and more specifically in terms of minutes of reading and math instruction adjusted for size of instructional group. To answer this question, we must estimate and analyze the sequence leading from changes in school district allocation policy, to programmatic changes in the delivery of services, to the actual services received by students. That sequence is presented in an analytic model in the next chapter.

Ancillary research objectives accompany the analysis of this sequence. First is the study of community reaction to Title I and the Demonstration Projects. Second is the study of costs and/or savings associated with the altered eligibility criteria and distributive policies. Finally, some effort will be made to exmaine achievement outcomes, but the current scope of work does not include inferential statistical analysis of achievement outcomes.

This constellation of research objectives has been called by NIE "The Demonstration Study". This chapter delineates the background for that study and its objectives as outlined in the above paragraph. This is done by describing the legislative origin of the study (2.1), by outlining how this study fits within the overall group of studies supported by the National Institute of Education (NIE) (2.2), by describing the districts and their initial proposals and plans (2.3), and finally, by presenting a more detailed exposition of the research objectives (2.4).

2.1 Legislative History and the Congressional Mandate

The Elementary and Secondary Education Act was passed with fanfare and optimism in 1965. In the decade of its implementation, however, there has been considerable concern that its compensatory education provisions have failed in their goals. The most commonly heard criticisms are:

- School districts that are struggling financially view Title I as "general aid" and spend it accordingly, failing to provide truly compensatory services;
- Monitoring by State Educational Agencies and the national Title I office is inadequate;
- Districts attempt to serve too many students at once and resources are spread too thin;
- Title I resources merely substitute for state compensatory funds that would otherwise be made available;
- Guidelines and regulations are too restrictive;
- Most of the compensatory programs themselves don't work, and the research necessary to find out which ones are successful has not been performed; and
- The correlation between poverty and educational performance has been misinterpreted and misapplied.

Many of these concerns were voiced in an influential critique of Title I by Ruby Martin and Phyllis McClure.[1] This critique, charging violations of the law, led to the formation of a high-level Title I Task Force and its report, New Directions for Compensatory Education.[2] Among the report's six "urgent" recommendations was a minimum $150 expenditure per Title I eligible student. It also suggested that a concentration of about $300 per student might be necessary to provide "appreciable impact". (This was also the conclusion of an Office of Education White Paper.[3])

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[1] Title I of ESEA: Is It Helping Poor Children?, by Ruby Martin and Phyllis McClure, Washington D.C.: Washington Research Project, NAACP Legal Defense and Educational Fund, 1970.

[2] New Directions for Compensatory Education, Report of the Title I Task Force to the Secretary of Health, Education and Welfare, January, 1971. This report was originally confidential, but is currently accessible under the Freedom of Information Act.

Very similar concerns have recently been reported to Congress by the Comptroller General of the United States.[4] This report outlines some findings that are particularly relevant for this study. These include the following:

- Some local agencies do not conduct and adequately document comprehensive assessments of the educationally deprived children's needs.
- Generally, the local agencies' bases for selecting program participants are not adequately documented. Some are not serving the most educationally deprived students, and several are not retaining students in the program until they reach grade level.
- Some local agencies could improve their Title I reading services by concentrating them on educationally deprived children or by providing adequate inservice training to Title I teachers and aides.

The Education Amendments of 1974, Public Law 93-380, authorizing the study presented in this report, reflected the Task Force's concern with the concentration of services within schools, as well as the Comptroller General's concern with targeting services for the educationally deprived. The Amendments particularly reflected a widespread concern of administrators that the poverty criterion for distribution of funds to districts might be inferior to a criterion based on educational achievement.[5] In the Educational Amendments of 1974, Congress authorized the National Institute of Education to conduct a major study of compensatory education.[6] Specifically, NIE was mandated to:

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[3] The Effectiveness of Compensatory Education: Summary and Review of Evidence. Office of the Assistant Secretary for Planning and Evaluation. U.S. Department of Health, Education and Welfare, 20 April 1972.

[4] Report to the Congress by the Comptroller General of the United States. Assessment of Reading Activities Funded Under the Federal Program of Aid for Educationally Deprived Children. General Accounting Office: Washington, DC: 12 December 1975.

- Examine the fundamental purpose and effectiveness of compensatory education programs;
- Analyze ways of identifying children in greatest need of compensatory education;
- Consider alternative ways of meeting these children's needs; and
- Consider the feasibility, costs and consequences of alternative ways of distributing compensatory education funds.

In response to this mandate, the Educational Equity Group at NIE has planned studies in three substantive areas: Student Development, Fund Allocation, and Program Administration.[7] The Demonstration Study is in the area of Fund Allocation.

2.2 This Study Within the NIE Matrix

It is useful to outline how the Demonstration Study fits within the larger collection of studies supported by the Educational Equity Group in order to better understand the strategy developed for our analysis. These studies are referred to by NIE as "The Compensatory Education Study."

---

[5] In a national survey of school administrators in May 1966, approximately 70% stated that Title I funds should not be allocated on the basis of poverty. (Stephen Bailey and Edith Mosher, ESEA: The Office of Education Administers a Law, Syracuse: Syracuse University Press, 1968.)

[6] Public Law 93-380, Section 821. Appendix G of this report contains a copy of the legislation.

[7] Research Plan: Compensatory Education Study, National Institute of Education, Washington, DC, December 16, 1974; and Interim Report No. 1: Compensatory Education Study, National Institute of Education, Washington, D.C., August 1975.

Within the three substantive areas identified above, six studies were begun by NIE during Fiscal Year 1975.

Study 1. District Survey I

District Survey I is the only nationally representative survey of ongoing programs included in the NIE Study Matrix and is designed to produce a comprehensive picture of existing goals, organization, instructional and evaluation techniques of compensatory education. District Survey I will collect in-depth descriptive data in approximately 100 districts, and provide detailed information on: the objectives of ongoing compensatory programs; their organization; and their relationship to regular programs, district planning and evaluation techniques, parent involvement practices, and the use of teacher training. The Survey will collect general information about the frequency and type of individualized instruction provided in compensatory programs, which will contribute to site selection for a large-scale study of individualized instruction methods. Data from the survey will also be used to supplement and interpret the findings of the Compensatory Education Study's research into the administration and results of the Demonstration projects. The data will provide information for the first time about the characteristics of program supported by Title I and other compensatory education efforts.

Study 2. Design Contracts for Study of Individualized Instruction

The study of individualized instruction responds to the specific Congressional mandate to study individualized educational plans. Several contractors are now clarifying the concepts and research methods involved, and their work will be used by NIE in designing and implementing its large-scale study of the effectiveness of individualized instruction in the teaching of reading and mathematics. Individualized instruction, in which curriculum and rate of progress vary for each child, has been identified as a promising strategy for compensatory education students. However, the types of individualized instruction studies have varied, as has the extent to which they are well-implemented. Moreover, the individualized approach has not been compared adequately with well-implemented "standardized" instruction.

Study 3. Research Synthesis

These syntheses will examine program effectiveness by drawing together research and evaluation findings related to the effectiveness of compensatory education in reading and mathematics. They will review evaluations of compensatory education programs, existing research on individualized instruction, research on the nature of reading problems and the degree to which different reading programs effectively teach particular skills and deal with particular problems, and work on activity-based mathematics. Activity-based mathematics consists of teaching mathematics through the use of physical objects, (e.g., an abacus), and is extremely common in compensatory education programs. Firm conclusions on its effectiveness, however, are not available. Finally, this research includes a large project designed to synthesize knowledge on beginning reading instruction and to suggest appropriate curricula for teaching reading in the early grades.

Study 4. Alternative Designs for Compensatory Education

This project responds to that part of the mandate that requires examination of alternative ways of meeting the needs of compensatory education students. It will design alternative approaches to those currently used, including instructional techniques and implementation procedures which could be adapted for use by schools and districts. Among the approaches to be considered are: the use of small ungraded schools, heavy emphasis on the home culture of minority-group children, peer tutoring, and emphasis on programs for intermediate grades.

Study 5. Research on Demonstration Title I Compensatory Education Projects

This is the Study described in this report. Broadly stated, the task of this research is to identify the effects of changes in the allocation and concentration of Title I funds. The direct and indirect effects to be studied include change in compensatory programs, changes in program organization, changes in instructional services delivered to and received by children, and changes in parent and community response.

Study 6. Survey of Legal Standards

In addition to the requirements of Federal regulations for ESEA Title I, compensatory education is strongly affected by state additions to and interpretations of these regulations, and by regulations governing other state compensatory programs. The survey will examine, compare and analyze these requirements, the internal consistency of sets of regulations, the relationships between them, and their implications for the organization and content of compensatory education at school and district levels.

To date in FY 1976, NIE has funded three additional studies (Study 7, Study 8, and Study 9). The first (Study 7) is a study of individualized instruction based on the results of Study 2 and Study 3 above. This study will examine well-implemented individualized and standardized approaches and provide conclusions concerning:

- the effectiveness of individualized instruction including the use of written educational plans for compensatory education programs;
- those aspects of individualization which are crucial;
- successful methods of involving parts in individualized programs; and
- the conditions for successful implementation.

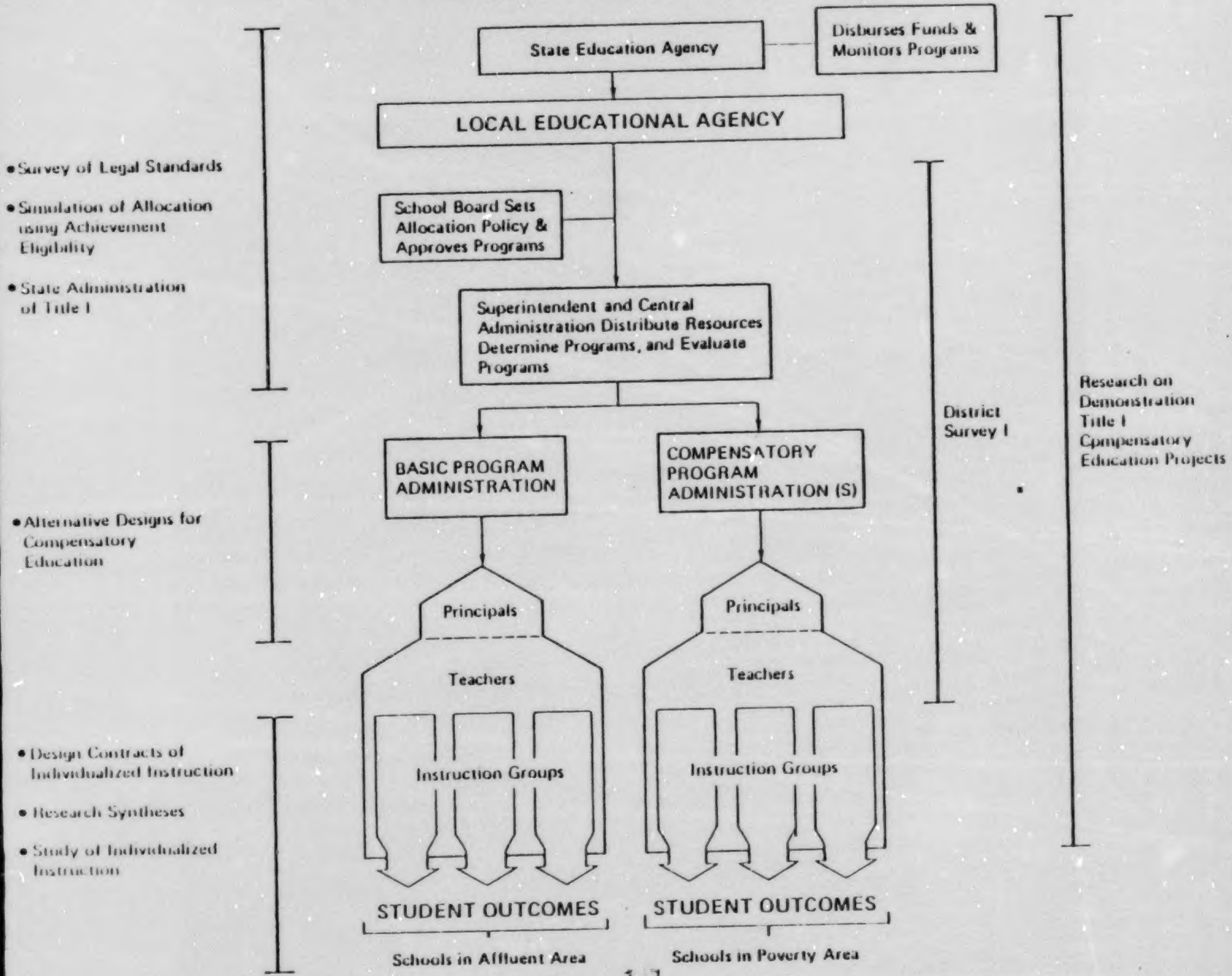
Study 8 is a computerized simulation of the effect of using student achievement instead of poverty for the allocation of Title I funds and the determination of eligibility for Title I. Study 9 is an examination of the administration of Title I by State Education Agencies and the impact of varying state strategies on local school districts' performance.

Figure 2-1 on the following page is a visual presentation of the institutions and actors below the federal level involved in Title I compensatory education. It indicates the coverage of each of the studies previously described across these institutions. It also indicates the overlap among studies.

The center of this figure portrays the institutions and actors involved in the operation of Title I compensatory education programs from State Education Agencies (SEA) through students. The SEAs receive federally appropriated funds, allocated and administered by the United States Office of Education. They in turn allocate these funds to Local Education Agencies (LEA) and they monitor the administration of these funds by the LEAs. The LEAs submit proposals, evaluations and comparability reports to the SEAs. The LEA school boards set policies and approve programs. The LEA administrations under the direction of the superintendents operate both basic instructional programs and compensatory programs. Students receive instruction within groups--classroom and other--within schools. Student performance levels are, hopefully, affected by this instruction. Students learn to read and write as well as to do arithmetic and mathematics.

Along the two sides of this figure, the coverage of the nine studies are indicated by lines which extend up and down institutions and actors which are involved in Title I. Study 5, Research on Demonstration Title I Compensatory Education Projects, is the concern of this report.

COVERAGE OF NIE STUDIES OF STATE EDUCATION AGENCY AND LOCAL EDUCATIONAL AGENCY OPERATION OF TITLE I COMPENSATORY EDUCATION PROGRAMS


State Education Agency
Disburses Funds & Monitors Programs
LOCAL EDUCATIONAL AGENCY
School Board Sets Allocation Policy & Approves Programs
Superintendent and Central Administration Distribute Resources Determine Programs, and Evaluate Programs
BASIC PROGRAM ADMINISTRATION
COMPENSATORY PROGRAM ADMINISTRATION (S)
Principals
Teachers
Instruction Groups
Principals
Teachers
Instruction Groups
STUDENT OUTCOMES
STUDENT OUTCOMES
Schools in Affluent Area
Schools in Poverty Area
• Survey of Legal Standards
• Simulation of Allocation using Achievement Eligibility
• State Administration of Title I
• Alternative Designs for Compensatory Education
• Design Contracts of Individualized Instruction
• Research Syntheses
• Study of Individualized Instruction
District Survey I
Research on Demonstration Title I Cpmpensatory Education Projects

Probably the most significant overlap between our study and others is with District Survey I (Study 1). Since District Survey I is the only nationally representative study, and since the districts in our study are self-selective in at least two respects, the District Survey I study is the most important for comparative purposes. With this in mind, every effort has been made to use the equivalent instruments for these two studies. That has not always been possible, but a large number of the estimates and analyses described in subsequent chapters can be replicated across these two studies. Since the objectives of Study 4, Study 6, Study 8, and Study 9 differ from those of our study, similar efforts have not been made to assure comparability of data.

Finally, our study overlaps with the studies of individualized instruction (Study 2) at the level of students in the classroom. Both studies will analyze instruction received by students. Our study will provide descriptive information on achievement levels of students receiving instructional services from compensatory programs. If the districts provide adequate data, our study will also provide descriptive data on achievement outcomes. Given the restriction which precludes our administering tests, we will not be able to study achievement outcomes with any strong basis for statistical inference in all districts included in this study.

2.3 The RFP for School Districts, Their Proposals, and Those Selected

There are sixteen school districts in the Study of Demonstration Title I Compensatory Education Projects. They were selected through a competitive process. NIE issued an RFP to the 50 states in the Spring of 1975. Each state was requested to distribute the RFP to school districts and to submit up to two proposals from its districts. In fact, 27 districts in 19 states submitted proposals, and, of these, 16 districts in 13 states were awarded contracts.[8]

The states were, in this respect, self-selective in volunteering for the Demonstration and/or distributing the RFP to districts. The districts were self-selective in responding to the RFP. We are able to document some general characteristics of the states and districts which were awarded contracts. We are unable to do the same for those not awarded contracts or which did not choose to apply.

The sixteen selected districts are listed below.

Adams County, Colorado
Alum Rock, California
Berkeley County, W. Virginia
Boston, Massachusetts
Charlotte, North Carolina
Freeport, New York
Harrison County, W. Virginia
Houston, Texas
Mesa, Arizona
Newport, Rhode Island
Oklahoma City, Oklahoma
Racine, Wisconsin
Santa Fe, New Mexico
Wichita, Kansas
Winston-Salem, N. Carolina
Yonkers, New York

These "Demonstration districts" were awarded contracts that fund planning activities for the year 1975-1976. At the end of the contract period, June 30, 1976, the districts will submit implementation proposals to NIE. After this, NIE will decide which districts to fund for program implementation. These contracts will provide funds for administration. They will not provide funds for educational services directly. The overall size of

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[8] The RFP was also sent to Puerto Rico; one district submitted a proposal.

Title I funding in each district will remain dependent on the poverty characteristics of the district.

The RFP issued by NIE suggested the possibility of conducting the Demonstrations within a planned variation framework. It implied that some effort would be made to select districts representative of different cells in a matrix of allocation options. (See Table 2-1.)

All districts selected to participate in the NIE experiment, however, chose to switch from a poverty to an educational criterion for school eligibility. In their proposals, they offered three principal rationales:

1. They challenged the underlying Title I assumption that there is a direct and reliable correlation between poverty and educational underachievement. They argued that the poverty criterion is illogical as a filter for funds to serve the educationally disadvantaged. Thus, they proposed the use of measures of educational disadvantage to determine eligibility and allocate resources.
2. Most of the school districts participating are desegregating. Since Title I funds are distributed by poverty concentration in a given attendance area, they argued that poor children who are being bused out of an eligible area (and from eligible schools to non-eligible schools) are being deprived of deserved funds.
3. Districts argued that it is inequitable to deny compensatory services to children in need because they live on the wrong side of the street, i.e., poor students who cannot read but live in a school attendance area where there aren't many students like themselves, cannot currently receive services.

To the degree that the district proposals can be placed in the original eight-cell matrix, they all fall within one cell: Cell 6. The tentative plans of the school districts are fairly uniform on three characteristics taken as departures

TABLE 2-1

NIE MATRIX OF ALLOCATION OPTIONS
(TAKEN FROM NIE RFP)

	Use of Student Achievement Measures		Use of Poverty Measures	
	Increased Concentration Among Schools	Decreased Concentration Among Schools	Increased Concentration Among Schools	Decreased Concentration Among Schools
Increased Concentration Among Students	1	2	3	4
Decreased Concentration Among Students	5	6	7	8

from their current practices. All districts propose to do the following:

- adopt an achievement criterion of eligibility of schools;
- increase the number of schools receiving Title I assistance; and
- increase the number of students participating in Title I programs.

The uniformity of district plans on these three dimensions is a major research consideration which influences the research goals and the approach of the study. The study will incur certain benefits from the similarity of these proposals.

Certainly our confidence in generalizing from our findings is increased by the greater number of sites adopting the same approach. The fact that so many of the districts chose to do the same thing suggests that we are studying a policy option favored by a range of school districts. If the judgments of the administrators who deal with the implementation of Title I on a daily basis are to be credited, then the diffusion of resources among a greater number of schools and students may well be an attractive policy option. It is certainly one enjoying a lively interest among these 16 districts.

Although districts appear to be uniform in terms of the options originally defined by NIE, there are important ways in which they do vary. They vary in terms of the achievement criteria used for selection--the tests used, the cut-off points used, and the use of simple versus complex indexes of educational disadvantage. A conceptualization of allocation options slightly different from that in the RFP is presented in Table 2-2 below. There are three dimensions to this conceptualization: 1) an increase in the number of schools[3], 2) an increase in the number of students within schools, and 3) an increase in the total number of students served. There are six logical possibilities outlined in this table. While it is likely that most of the districts will fall within Cells (2) and (4), it is possible that the remaining cells will also be included under implementation.

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[3] At least one district currently plans to hold the number of schools constant.

TABLE 2-2

LOGICALLY POSSIBLE DISTRIBUTIVE POLICIES DURING THE IMPLEMENTATION OF TITLE I COMPENSATORY EDUCATION DEMONSTRATIONS

Services Distributed to an Increased Number:		Services Distributed to an Increased Number of Students Across Schools	
Of schools	Of students within schools	No	Yes
YES	YES	(1)	(2)
	NO	(3)	(4)
NO	YES	(5)	(6)
	NO	(7)	(8)

Cells (1) and (8) are crossed out because they are not logically possible.

The districts also differ in the concentration of funds across schools and among students. In fact, although there is currently wide variation among Demonstration districts in their Title I expenditures per student, the proposed changes in allocation introduced by the Demonstration would increase this variance.

In order to briefly summarize the allocation proposals, two charts are included here.[10] Figure 2-2 shows increases in coverage of schools and students in each of the Demonstration districts. (Those districts for which we have information on only one of the two variables, as indicated by their proposals, fall outside the graph. These are Boston, Yonkers and Santa Fe. For Newport, there is information in the proposal on neither number of schools nor number of students in the Demonstration.) Clearly, widely varied amounts of absolute change were proposed by the 16 school districts. Such variance is in large part a function of the size of the school district and the size of the population currently served within each school district. (It is probably a function of other factors as well.)

In order to adjust for size characteristics of the school district and the current Title I population, the percentage change in the number of students and schools served from the current planning year to the implementation year can be estimated using the following formula: If A = the number of students or schools served under current Title I programs and B = the number of students or schools proposed to be served under the Demonstration, then the percentage change in students for schools = (B-A)/A. Examination of the percentage changes, which are displayed in Figure 2-3 reveals that there is variance across districts, even taking into account the size of the school district and the population currently served.

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[10] These charts are based on the districts' planning year proposals. Plans are still changing and the actual implementation proposals may not show the same distribution.

FIGURE 2-2

CHANGE IN SCHOOLS AND PUPILS SERVED BY NUMBER AND BY PERCENTAGE

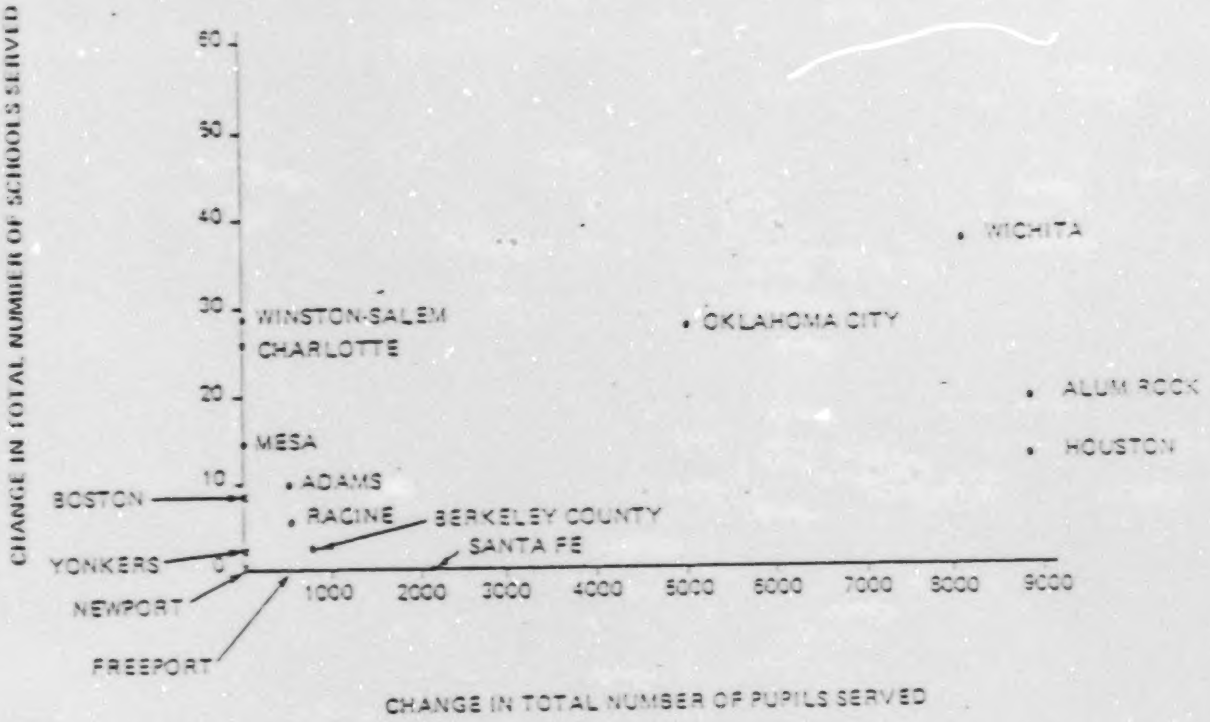
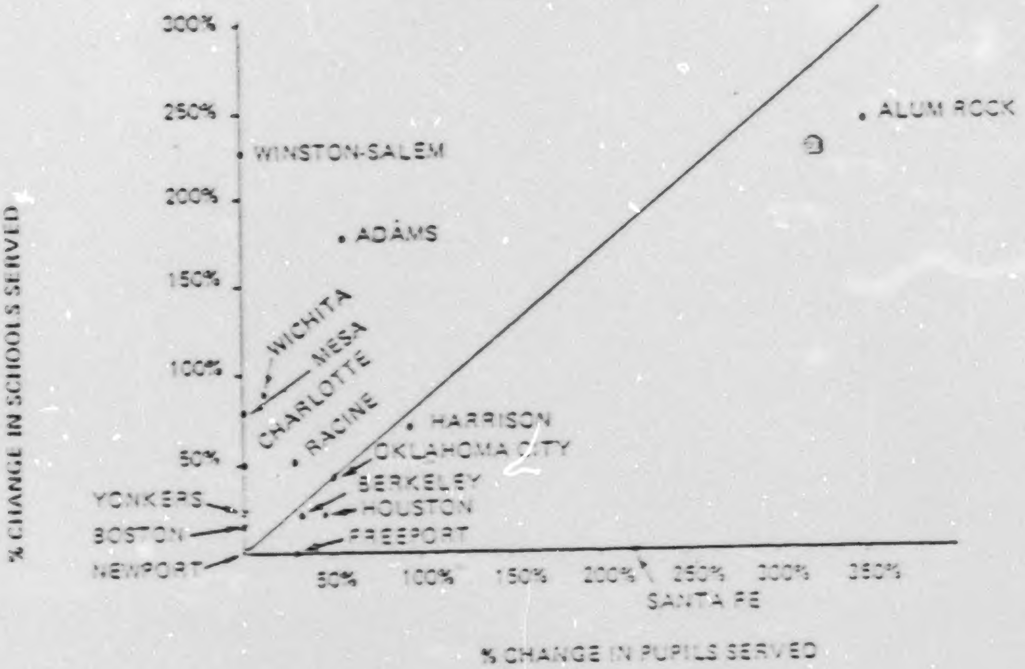


FIGURE 2-3



*—— Indicates information for one axis only

Thus, it is possible to analyze the impact of changes in allocation across the absolute number of both students and schools served. In addition, we can examine the impact of allocation across the combined changes in coverage of students and schools. Viewed in this way, the changes in allocation can be analyzed as independent variables in a regression or other least squares statistical analysis.

A closely related way to conceptualize the distributive changes proposed is to categorize schools into three types: those currently receiving Title I services, those which do not now receive Title I services but will during the implementation years, and those which will never receive Title I services. Having categorized the schools in this manner, we can then calculate the proportion of all schools in a district in each of these categories and graph these proportions on triangular coordinates. (See Figure 2-4)[11]

This conceptualization of allocation changes illustrates the joint effects of Demonstration policy decisions and poverty characteristics of a district. The lower the districts are on the graph, the smaller is the poor population, and proportion of schools currently served by Title I. The farther to the left the districts lie on the graph, the less pervasive is the plan for change. The farther to the right the districts lie on the graph, the more pervasive is the plan for change. The farther the districts lie from the bottom of the graph, the less room there is for allocation change, because the districts are already serving a large proportion of their schools.

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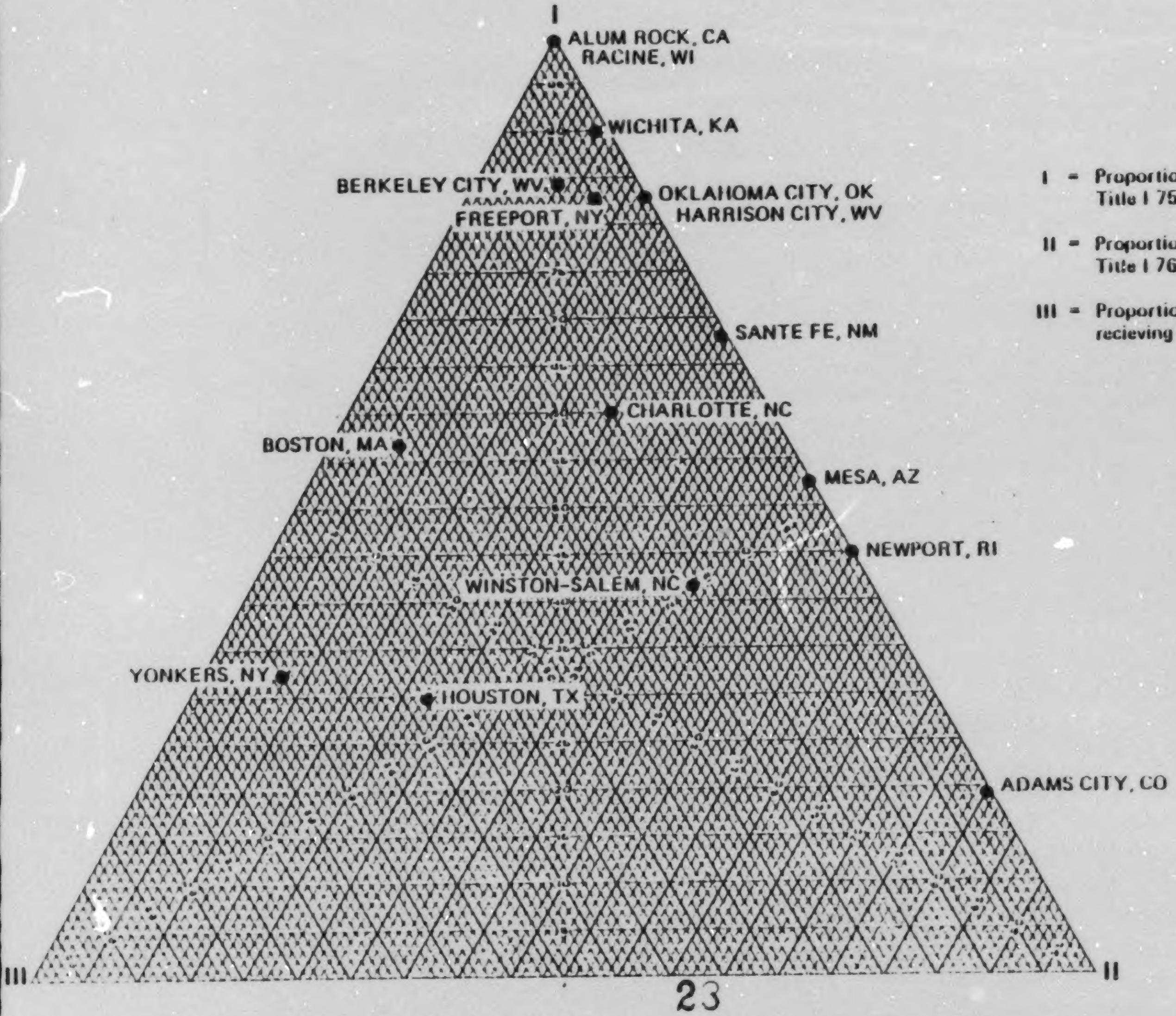
[11] The proportion estimates in Figure 2-4 are based on the best evidence available to us at this time. We do not expect that they will remain constant for the implementation years. We are only able to provide these estimates for schools, not students, because student data are not yet available.

Figure 2–4

GRAPHIC PRESENTATION OF DISTRIBUTIVE POLICY OPTIONS



I = Proportion of schools receiving Title I 75–76 and 76–77

II = Proportion of schools receiving Title I 76–77 only

III = Proportion of schools never recieving Title I

Continuous variables could be developed for analytic purposes using the three dimensions of this graph separately, or in combinations of two. Clusters could also be identified among all three dimensions and analyzed as categorical variables.

In short, the Demonstration options chosen by the districts do set some constraints on the analysis we can perform, but they also provide ample opportunity for analysis directed towards the central policy objectives of this study.

2.4 General Study Objectives

Our own consideration of the legislative intent for this study, the definition of the study within the set of studies planned by NIE, and the districts' Demonstration plans, together with guidance we have received from NIE technical staff, have led to the establishment of five major research objectives. They are presented below in order of priority.

1. To estimate and analyze the distribution of services received by students. This objective encompasses an approach in which a log is developed for a sample of students for entire sample days in order to compare the full range of instructional services received by different types of students: Title I versus non-Title I students, students from varying socio-economic and ethnic backgrounds, and students of varying achievement levels.

2. To estimate and analyze the distribution of services delivered across types of schools and types of students. This objective encompasses estimates derived from principals and teachers and incorporates changes in programmatic content and strategies, as well as distributional changes.

3. To estimate and analyze community reaction to the Title I programs and the Demonstration. This objective encompasses interviews with parents of Title I children, members of Parent Advisory Councils, and a general sample of citizens.

4. To estimate and analyze the costs or savings associated with the altered allocation and eligibility policies.

5. To gather descriptive information on the possible achievement outcomes of the Demonstrations.

3.0 GENERAL STUDY DESIGN

This chapter outlines the general study design. This design represents our best solutions to the variety of conflicting problems and constraints which have been imposed on this research. The design is one which evolved over the first several months of the project.

Our original design (contained in our proposal) included a panel study of a sample of students plus a subsample of parents of all types of students in order to measure services received. Further, it included measurement of services delivered by classroom teachers as well as reading and mathematics specialists. The latter was not linked to specific class periods in which sampled students were taught; instead it provided estimates based on general typical practice. Finally, our original design was aimed at estimating the effects of districts using both achievement and poverty criteria and distributing instructional services less extensively as well as more extensively.

The design described in this chapter departs from that original design by using grades within schools as the longitudinal unit for analysis rather than a panel of students. New student samples are drawn each year. Teachers are asked to fill out questionnaires which describe specific class periods in which sampled students receive instruction. The design is aimed at estimating the effects of substituting achievement criteria for poverty criteria to determine eligibility and of extending services to more schools.

There are two general reasons for the departures from our original design. First, the school districts uniformly proposed the use of achievement criteria of eligibility and extending services to more schools (see Section 2.3) contrary to the assumptions made in our proposal. The second general reason is that the priorities among the research objectives were reorganized in response to requests by the NIE technical staff. (See Appendix A for more complete discussion of this part of the evolution.)

In brief, the revised design is one in which schools are sampled within three strata:

1. Schools which currently receive Title I (1975-76) and which are expected to receive Title I during the implementation years of the Demonstration (1976-77 and 1977-78);
2. Schools which do not receive Title I, but which are expected to receive it during the implemention years of the Demonstration; and
3. Schools which do not now receive and do not expect to receive Title I during the course of the Demonstration.

With these sampled schools, all third and fourth grade classrooms are included. Students are sampled from within these classrooms. Data is collected on the instructional and other services delivered to these students and received by them. Logs are completed for entire sample days describing the total instruction received during that day. Questionnaires are completed by teachers describing the instruction given during specific class periods. Principals complete questionnaires describing the organization of the school, the services provided, and characteristics of the student population. Parents of Title I students are interviewed.

3.1 Primary Research Questions

The primary research questions to be addressed in the study of Demonstration Compensatory Education Projects are those listed below in order and priority:

1. What changes in Title I allocation policy are made by each of the sixteen Demonstration districts under the waiver of federal regulations?
2. What effects do changes in Title I allocation policy have on the instructional and support services experienced by students of different types within the sixteen Demonstration districts?
3. What effects do changes in Title I allocation policy have on the characteristics of students served by Title I and the other compensatory programs within the sixteen Demonstration districts?

4. What effects do changes in Title I allocation policy have on the organization and administration of compensatory programs and the instructional services delivered within the sixteen Demonstration districts?

5. What is the reaction of parents, professionals, and citizens in general to changes in Title I allocation policy within the sixteen Demonstration districts?

6. What effects do changes in allocation policy have on student achievement within the sixteen Demonstration districts?[1]

7. What are the costs and/or savings associated with changes in Title I allocation policy? What costs are non-recurring, such as costs associated with planning, and what costs are recurring, such as costs associated with testing and changes in program administration?

In addition to these primary research questions, we will explore several other questions in order to set the context for the Demonstration Study and amplify the questions presented above. These secondary research questions include the following:

1. What are the demographic, bureaucratic, and other characteristics of the states, districts, and schools participating in the Demonstration Study?
2. Are these characteristics associated with the manner in which districts applied or planned for the Demonstration or the allocation policies chosen?
3. How do the sixteen Demonstration districts plan for the implementation of the Demonstration?

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[1] The fact that this question is relatively low on our list does not necessarily reflect its order of importance, but rather the limitations imposed upon our ability to answer it. Since the collection of achievement test data has been prohibited in the Demonstration Study, we must rely upon the achievement test data already collected by the Demonstration districts. Such data is not available from all Demonstration districts, and is variable in its utility.

4. Are there characteristics of the planning process which are associated with "successful" Demonstrations? If so, are these manipulable?

5. Are the effects of changes in Title I allocation policy on student experiences direct, or are they a function of changes on program organization and program delivery patterns?

6. Are the effects of changes in Title I allocation policy on parental reaction direct, or are they a function of district or school policies with respect to parental involvement, changes in student experiences, and/or changes in the characteristics of students served.

Finally, a research question which underlies the entire Study is the representativeness of the sixteen Demonstration districts to other Title I districts as a whole and/or to different types of Title I districts within the entire set.

In the remainder of this report, we will present the analytic model which is designed to answer these questions, as well as the research designs, variables, and analytic procedures which will enable us to do so.

3.2 Details of Study Design

3.2.1 The Analytic Model

The basic analytic model underlying the Title I Demonstration Study is presented in Figure 3-0. The model consists of the variable groups and the links between them that will be analyzed in this research.[2]

Allocation Policy (Group C) is the primary independent variable in the Demonstration Study. Variable groups to the left of Group C represent contextual variables which may influence allocation changes. The dotted lines linking Groups A, B, and C indicate relationships that will be explored conceptually and graphically. Statistical analyses will not include tests of significance for this part of the data.

Variable groups to the right of Group C represent potential outcomes of allocation changes. Arrows on this side of the model represent both direct and indirect links between allocation changes and each of the outcome variables. Solid lines represent relationships which will be explored statistically in our basic research approach. Linkages between student achievement and other variable groups are set off because they do not represent a part of our basic approach. These relationships may be explored for a subsample of Demonstration districts depending on the availability of adequate data for such an analysis.

Contextual Variables

Two groups of contextual variables are displayed in the model: A) the setting for the Demonstration, and B) the history of the planning/application process. Setting (Group A) includes characteristics of the State Education Agencies (SEAs)

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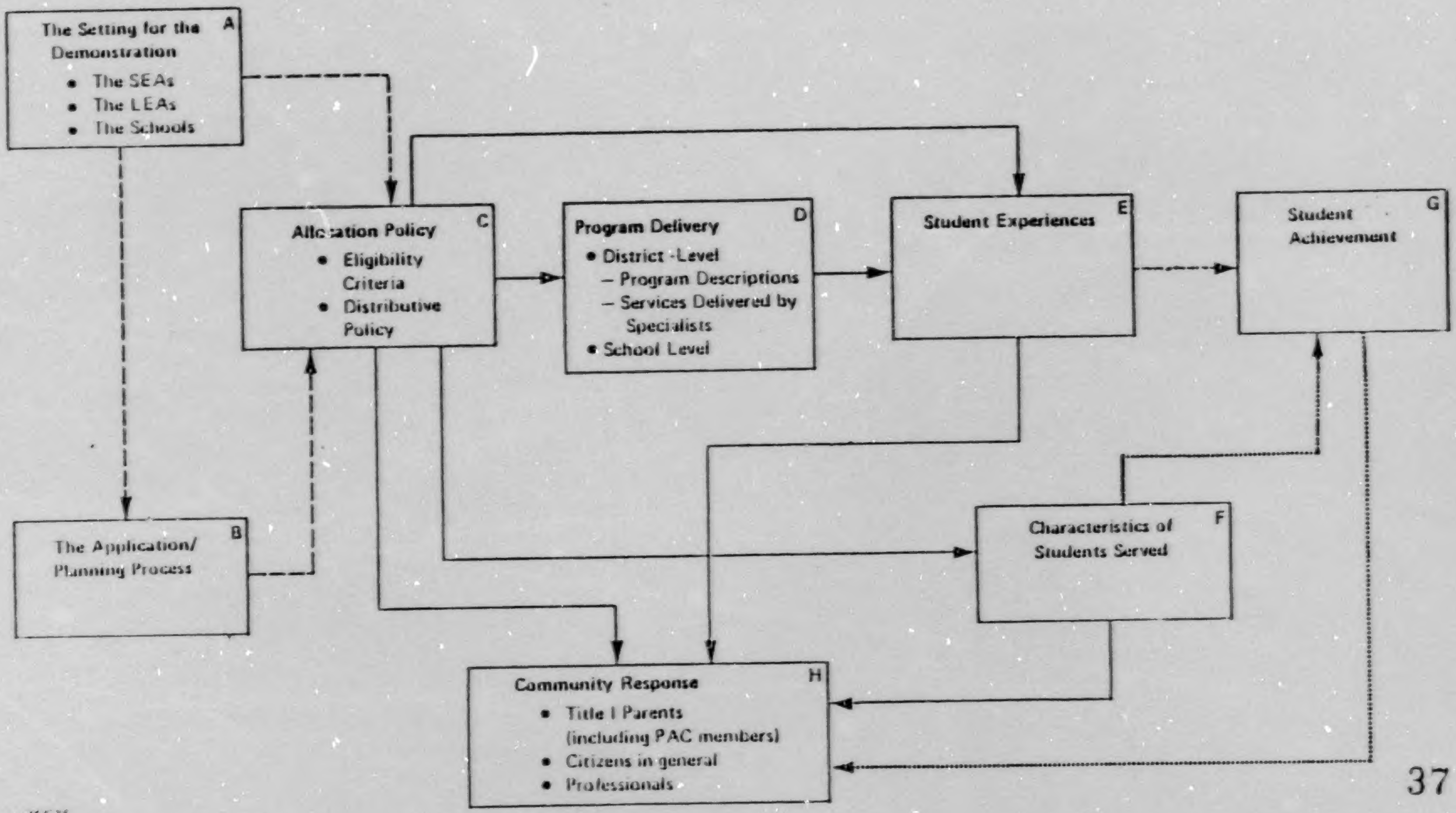
[2] Chapters 4.0 through 9.0 will describe each of the components of the model in further detail. Chapter 10.0 will present analytic approaches to measuring the relationships among components and Chapter 11.0 will describe approaches to measuring change in these relationships over time.

FIGURE 3-0

THE ANALYTIC MODEL FOR RESEARCH ON DEMONSTRATION COMPENSATORY EDUCATION PROJECTS


The Setting for the Demonstration A
• The SEAs
• The LEAs
• The Schools
Allocation Policy C
• Eligibility Criteria
• Distributive Policy
Program Delivery D
• District -Level
– Program Descriptions
– Services Delivered by Specialists
• School Level
Student Experiences E
Student Achievement G
The Application/ Planning Process B
Characteristics of Students Served F
Community Response H
• Title I Parents (including PAC members)
• Citizens in general
• Professionals

KEY

– – – – – Links to be analyzed conceptually

———— Links to be analyzed statistically for full range of districts

………… Links to be analyzed statistically, where possible, for a subset of districts (See .)

such as size, location, regulatory functions, and the organization of the Title I office. It also includes demographic and bureaucratic characteristics of the Local Education Agencies (LEAs). Finally, it includes characteristics of the schools in each of the sixteen LEAs, focussing on physical qualities and characteristics of school administrators. Knowledge of the setting enables us to describe the characteristics of the key organizations in the Demonstration, to determine the degree to which the settings of the Title I Demonstration programs are representative of other Title I districts, the degree to which the settings vary, and the degree to which the characteristics of the settings influence allocation policy.

Variable Group B consists of two parts: application and planning. The history of the application process provides information on the selection of Demonstration districts, beginning with the distribution of the Request for Proposals (RFPs) through the State Education Agencies (SEAs) to the individual school districts, and ending with the final choice of districts by NIE. At each stage, self-selection may have occurred. Documenting the process will provide us with additional information on the representativeness of the Demonstration districts. The planning process also provides a background for the study of allocation changes. Our purpose with respect to this part of the research is to describe the planning process in each district, and the extent to which it varies across districts.

In addition to setting the stage for the Demonstration, contextual variables are of interest because of their potential relationships to one another and to the allocation changes adopted by the LEA. Among the questions implied by the links among these variable groups are the following:

- Is there a relationship between the bureaucratic structure of the school district and the extent of staff/community participation in the planning process? (Link AB)
- Is there a relationship between district size and distributive policy? (Link AC)

- Is there a relationship between SEA regulations and the Demonstration options chosen by the LEAs? (Link AC)
- Does the nature and extent of staff/community participation in the planning process influence allocation policy? Does strong Parent Advisory Committee (PAC) involvement lead to fewer changes? (Link BC)
- Does concurrent desegregation lead to the selection of certain Demonstration options? (Link AC)

Answers to these questions may provide some indication of the kinds of allocation changes which might be made by various types of LEAs if a general waiver were granted, or use of achievement criteria adopted. To the extent that variables are manipulable they also offer insights into the best approach for successful replication of certain Demonstration options. Finally, they enrich our characterization of districts. In Section 2.3 we discussed sorting districts into categories based on allocation strategies alone. More elaborate and policy relevant categories might include:

- Small vs. large districts undergoing 100% deconcentration of schools, and/or
- Districts making allocation changes with or without the support of various interest groups or concerned actors.

Outcomes

On the right hand side of the model are several potential outcomes of changes regarding allocation policy.[3] Changes in eligibility criteria and/or concentration of services may have an impact on one or more of these variable groups. Each of these has varying degrees of importance for the Demonstration and thus for the ways in which our resources will be organized for the analysis. The clearest and most direct outcomes of allocation changes are likely to occur in the area of program delivery (Group D). Such changes are direct in the sense that they take place almost by definition. Program delivery refers to the content and context of instructional and support services offered by Title I and other compensatory education programs in a district. If districts change the number of students served in a school and/or the number of schools served in the district, they are likely to be using some new operational mechanism for delivering services to different students and/or schools. For example, if a district changes the number of schools served by Title I, it may do one (or more) of several things: (1) add more staff, possibly by borrowing from another program; (2) modify staffing or other resource patterns, e.g., by substituting less costly aides for specialists or materials for staff; or (3) change the ways in which staff are utilized, e.g., as resource persons rather than instructors. If school districts make such changes, it is likely that students will be receiving substantially fewer services or services in increasingly large groups.

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[3] Note that what is a potential outcome of an allocation change may also be an independent or mediator variable for other outcome variables.

A highly differentiated set of changes is implied in the simple descriptive term "changes in program delivery." We mean goal and policy changes in programs at the district level as well as the organization of programs across the district. We mean the organization of programs within schools. We mean basic strategies developed across the district and within given schools. We mean the actual delivery of instructional services to students. Since program delivery incorporates all of these, our approach is to measure changes at all levels in order to develop a precise and detailed description of the generic outcome "program delivery".

Characteristics of Students Served

The characteristics of the students served under Title I programs comprise another direct link between allocation changes and outcomes (Link CF). If the criteria and procedures for selecting students change, one would expect to find differences in the characteristics of the Title I students selected under each set of criteria and procedures. This apparent tautology can be dispelled. To the extent that eligibility criteria based on poverty identify the same students as criteria based on educational needs, there may be little or no change in the characteristics of students served. To the extent that within-school selection procedures are currently based on achievement criteria, there may be little or no change in the characteristics of students served.

The relationship between allocation changes and student characteristics has great policy relevance. It addresses the question of which constituencies--black or white, rich or poor--gain or lose services under the waiver. For those who argue that Title I is a poverty program designed to provide equitable services to poor schools and/or students, a radical shift in the characteristics of students served from poor to non-poor may provide strong support for _not_ deregulating the program, or for _not_ using achievement test scores as the criterion for selecting schools.

Student Experiences

The third outcome represented in the model is Group E: student experiences. Our goal with this outcome is to measure the degree to which instructional services of varying types are experienced by students with varying characteristics. This requires measuring the exposure of students to various services and identifying the different characteristics of these students.

This outcome is both directly and indirectly linked to allocation changes in our model. Obviously, changes in the content and context of instructional services associated with allocation changes will have an indirect effect on the experiences of students (Link DE). Even without concomittant changes in program goals, organization or strategies, however, students the case, for example, when the same number of staff attempt to teach more students using the same objectives and the same instructional strategies. Students must experience services that are reduced in time length and/or in adult-child ratio, if not qualitatively different experiences.

Community Response

Community response to Title I in its current form and under the Demonstration will be analyzed in the research because of the interest NIE and Congress have expressed in determining the degree to which programs are accepted and supported by the community. If an allocation alternative and a set of program outcomes are estimated to be cost beneficial according to some objective standard, but are unacceptable to people in the community, then the program may not be an attractive policy. The most crucial segment of the community by which public acceptance of the program may be gauged is comprised of parents of students enrolled in the Title I program. Parents, especially PAC members, are most likely to come in direct contact with school personnel, to obtain from them information about the quality of the school, and to have a direct impact on school operation.

The analytic model also takes into consideration school professionals as another crucial segment of the community. This group is important not only because of their professional responsibilities within the school system, but also because of their activities as members of professional organizations. Finally, citizens' attitudes towards the school system will be sought. As taxpayers and voters, their reactions to the program are important in satisfying the Congressional mandate of program evaluation.

Systematic survey data will be collected from parents and professionals to measure community reaction to the Demonstration. The relationship between allocation changes (Link CH), characteristics of students served (Link FH), student experiences (Link EH), district and school level policies, and parental involvement, awareness, and reaction to the Demonstration program (Link DH) will be examined. To assess the reaction of citizens in general, a limited telephone survey will be used.

Student Achievement

The final outcome indicated in the model is student achievement (Group G). The RFP clearly states that we will not administer achievement tests as part of this research. We must, therefore, rely on data available through school district testing programs in order to investigate changes in student achievement. Given the variety of constraints on comparability across districts, including different tests, tests administered at different times of the year, tests administered at different grade levels, and tests administered in different manners, precise statistical analysis of student achievement across all districts cannot be accomplished in this research. To convey this in the analytic model, all achievement links in the basic model are represented by dotted lines. The approach to this part of our research model will be presented in a separate report.

3.2.2 Levels of Generalization

There are two major factors which constrain our ability to generalize the findings of this research to other school districts in the United States. The first is the nature of the selection process for school district inclusion in the Demonstration and the second is the small number of districts in the study. Beyond these considerations, there are other factors which might affect our ability to generalize. These constraints are the subjects addressed in this section.

Selectivity began soon after NIE issued the Request For Proposal (RFP) to State Education Agencies (SEAs) and informed them that only two proposals per state would be accepted from Local Education Agencies (LEAs). Following that, different actors made decisions based on different criteria at different points in time. Some states offered the RFP to limited groups of districts while others distributed the RFP to all districts. In those states where the RFP was distributed selectively, the criteria could have varied from:

- Districts thought capable of administering a "good" Demonstration program, to
- districts which were in trouble and thus in need of help, to
- districts which had particular problems for which the Demonstration seemed a good solution.

In states such as these, districts not initially selected could have varied in requesting the RFP. After the RFP was distributed to districts, states could have varied in the amount of pressure applied on those districts reluctant to respond. The points we want to stress, then, are:

- States applied varying criteria in making decisions to distribute the RFP, encourage submission of proposals, approve proposals, and submit them to NIE;
- districts made decisions to submit proposals on the basis of varying criteria; and finally,
- NIE made decisions to approve proposals, based on known criteria.

All of the above steps in the selection process introduce sources of bias about which our knowledge is limited. We have made efforts to document the selection process in those states and for those districts which were awarded contracts. (See Section 4.2.) We have not been able to do so for those districts whose proposals were not accepted or for those states and/or districts from which no proposals were received. We do know the criteria applied by NIE in the acceptance or rejection of proposals. Thus, we can make *some* estimates of the direction of selectivity biases and can make some efforts to adjust for these, but our ability to do so is very tightly constrained. The findings of this research, therefore, cannot be generalized to all school districts in the United States, in any given region, or in any given state, or to districts of any particular type without extreme caution and careful qualification.

The second factor which constrains our ability to generalize is the small number of LEAs in the Demonstration. Regardless of the selectivity factors described above, the fact that the study includes sixteen of approximately thirteen hundred LEAs in the United States imposes constraints. We can make some effort to adjust for the indicated biases by examining the differences between the demographic characteristics of the Demonstration districts and the demographic characteristics of all districts. Unfortunately, little in the way of past research indicates how these demographic characteristics are correlated with policy or outcome variables which are of interest here.

Fortunately, District Survey I provides us with an opportunity to make some estimates of biases and to thus make adjustments or assert qualifications with regard to our findings. We will be able to examine demographic characteristics of this national probability sample of school districts. We will have similar, and, in some instances, exactly comparable data with regard to school district programs, school level characteristics, and instructional providers' activities. Thus, we can examine the difference between the sixteen Demonstration districts and the hundred surveyed districts with respect to distribution of these variables. We can also analyze the intercorrelations of these characteristics within the hundred surveyed districts in order to detect possible second level sources of bias. Finally, we can compare these intercorrelations with some intercorrelations in the Demonstration districts in order to properly interpret our findings.

Making comparisons with District Survey I data will provide us with general evidence concerning the non-representativeness of the sixteen Demonstration districts. It probably will provide very little guidance in dealing with the selectivity problem.

The other factors affecting our ability to generalize are those related to response rates.[4] There could be problems due to low response rates across factors in the sampling design. Probably more important than these are the problems associated with low response rates for particular types of schools, teachers, or students. Most concern at the school level is centered on schools which are not currently receiving Title I services but which are likely to under the Demonstration. These schools have not been informed of their potential opportunity to receive federally supported services and are therefore less likely to cooperate with the research than are current Title I schools. At the teacher and student level, the concern for low response rates reflects the same reasoning. In addition, given unknown distributions of Title I students and non-Title I students across classrooms in Title I schools, we are concerned about response rates in situations where this distribution departs greatly from 50% Title I/50% non-Title I students within most classrooms.

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[4] See Appendix D for a more detailed and technical discussion of these problems.

Given the above constraints, it is essential to point out that the analytic design and the sampling design outlined in the following section are constructed so that estimates of program distribution across schools can be made by school type--not necessarily for all schools in a district. They are constructed so that estimates of services received by students can be made by types or groups of students. They are constructed so that community reaction can be estimated for Title I parents only. Thus, any generalizations which might be made on the basis of our research findings must be limited to these types and groups.

3.2.3 Sampling Plan

This section outlines the technical details of the sampling plan which evolved from the series of key interrelated decisions described in general in appendix A. The first section below, details the major decision steps. The following section will explain the exact nature of the samples both in the aggregate and for each of the sixteen demonstration districts.

3.2.3.1 Major Sampling Decision Steps

The design of the sampling plan for this study involved the interaction of three major factors: the objectives of the study, the characteristics of the districts, and the fiscal resources available to the study. Initial examination of these three factors led to the identification of certain key questions. The answers to these questions, agreed upon by the study staff and NIE personnel, set the major parameters for the sampling plan.

In the following sections, the crucial decision steps that confronted the study will be discussed, and the final decision reached will be presented. These essential elements of the five decisions are presented in Schematic 3-1. First, the givens that followed from previous decisions or other realities are presented. Second, the question posed will be addressed. Third, the realistic alternatives available to the study will be stated. And finally, the decision reached will be explained. The reader is urged to refer frequently to Schematic 3-1.

Decision Step One - To Sample or Census Schools

Upon examination of the sixteen demonstration school district proposals and Title I regulations, it became clear that programmatic and regulatory organization focused primarily on the school level. Rarely are services delivered other than through schools. For example, only two of the sixteen districts participating in the survey had school pullout compensatory programs and neither of these programs was significantly large.

SCHEMATIC 3-1

SCHEMATIC REPRESENTATION OF KEY SAMPLING PLAN DECISIONS

STEP ONE

GIVENS	QUESTION	ALTERNATIVES	DECISION
• Resources insufficient to census all schools • Three distinct types of schools from the point of view of the research question • Possible attrition of school districts	• Should schools be sampled from within districts, school types, or both?	• Sample from within districts • Sample from within school types • Sample from within school types within school districts	• Sample from within school types within school districts

STEP TWO

GIVENS	QUESTION	ALTERNATIVES	DECISION
• The study could afford a census of two grades, or a sampling of classrooms in no more than five grades • Decision to sample schools within types and school districts	• Should the study census two grades or sample classrooms in no more than five grades?	• Census classrooms within two grades • Sample classrooms in no more than five grades	• Census classrooms within two grades

STEP THREE

GIVENS	QUESTION	ALTERNATIVES	DECISION
• Decision to census two grades • Decision to sample from within school types within school districts • Observed concentration nationally, and in 16 districts, on elementary grades	• From what part of the grade continuum should the two grades be selected?	• Select one elementary and one secondary grade • Select two elementary grades • Select two secondary grades • Select two grades randomly	• Select two elementary grades

STEP FOUR

GIVENS	QUESTION	ALTERNATIVES	DECISION
• Decision to sample two grades • Decision to focus on elementary grades only	• Which grades should be selected?	• 2 + 5 • 2 + 4 • 2 + 3 • 3 + 4 • 3 + 5 • 4 + 5	• 3 + 4

STEP FIVE

GIVENS	QUESTION	ALTERNATIVES	DECISION
• Three pupil groups of interest • No information on distribution of pupils within classrooms • Pilot test experience suggesting upper bound of two pupil limit	• How many pupils should be selected by what means from each classroom?	Number of Pupils • One pupil per classroom • Two pupils per classroom Method of Selection • Pure random • Random within group • Proportional to pupil group size	• Two pupils per classroom randomly selected from within pupil groups

In addition, the policy considerations leading to this study focus directly on changes of regulations at the school level. For these reasons, the basic design of the sampling plan was begun by defining three school types (strata):

- *Type One*: Schools that receive Title I services during all three years,
- *Type Two*: Schools that will receive Title I services during both implementation years, 1976-77 and 1977-78, and
- *Type Three*: Schools that will not receive Title I services during any of three years of the demonstration.

Logically, there are a number of other types of strata possibilities. For example, there could conceivably be a stratum of schools receiving Title I during the first year where such services are removed in later years. However, *all schools in the sixteen districts fit into the three strata above*.

In addition to this given, the study clearly had insufficient resources to census all schools in all districts. Further, there was the distinct possibility that school districts might not participate in years 2 and 3 of the study. Hence, the first major question confronted by the study: "Should schools be sampled from within districts, school types, or both?" Given the above factors, only one decision could be made: to sample from within school types within each school district. This solution was both economically feasible, and minimized the effects of potential school district attrition. The other alternatives, sampling from within districts without regard to the school strata, would clearly not capture enough of the crucial Type II schools, Similarly, sampling from within school types, given the large variance in the distribution of certain types of schools across the districts, would have left the study in a precarious position if districts with larger percents of a certain type of school were to drop out of the study.

It should be noted that five of the school districts have not identified the exact schools to be included in the second stratum at the time of this writing. However, the school districts were able to identify "pools" from which the demonstration schools would later be drawn. In a sense, this creates a temporary fourth group of schools[5] from which some schools will receive Title I funds during the implementation years and others will not.

In conclusion, it should be noted that it is possible that during the third year of the demonstration a few schools might be added, for various reasons, to the Title I services program on the basis of poverty criteria. In addition, there is some probability that a few schools might lose Title I services during the third year of the demonstration. However, it is impossible to identify these schools at this time and it is our expectation that the actual percentage of schools falling into these unusual categories will be small.

Decision Step Two - Census Classrooms Within Two Grades Or Sample Classrooms In Up To Five Grades

A previous section, 3.1, explained the rationale for using grades rather than pupil as the longitudinal analysis unit. However, the resources of the study were clearly insufficient to study all twelve grades. The choice, fiscally constrained from the outset, was between censusing all classrooms within two grades or developing some classroom sampling strategy to be employed across up to six grades. The sampling of classrooms across grades approach was attractive in terms of the face validity of the study. A study which covered all five grades, in a reasonably defensible manner, would be generally considered more "valid" than one which covered only two grades. However, the advantages of focusing the resources of the study on two grades and censusing all classrooms within those grades, were considerable.

First, the censusing of two grade levels would minimize the effects of pupil mobility between classrooms and schools. At least two of the sixteen demonstration districts were observed to have rather substantial mobility rates. For example, one school district reported that 36% of all pupils changed schools or classrooms, or left the district in the 74-75 academic year.[6] This statistic, plus the vulnerability of eight of the sixteen demonstration school districts to court desegregation orders, gave the censusing of two grade levels within all sampled schools a considerable advantage. Specifically, such an approach would minimize the possibility that study results would be confounded by the differential mobility of pupils with particular characteristics.

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[5] In later discussions we will refer to these schools as type 2A and 2B.

Another factor in favor of concentration on two grades was the problem of heterogeneous allocation of students within schools. Many schools, both nationally and within the demonstration districts, group according to pupils' characteristics, such as reading ability level. Given small classroom N's within the typical school, the effect of such variation on basic design parameters would have been considerable. In a classroom sampling approach, random selection resulting in three classrooms for the gifted in a district with 36 classrooms could prove extremely problematic from a statistical viewpoint.

In addition to these considerations, an examination of the programmatic characteristics of the demonstration districts revealed that program content, process, and to some extent student participation differed significantly across grade levels. Hence, aggregation of the results of the data from grades covered by discrepant programs would introduce an additional source of variation capable of statistically masking programmatic changes.

Yet another factor in favor of selecting two grades was the unknown distribution of Title I pupils across classrooms.

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[6] Every attempt was made to secure estimates of this information for all sixteen districts. However, less than half of the districts had information available in a useable and comparable form.

At the outset of this study, the proportion of pupils of any grade level identified as Title I pupils was less than 15%. The distribution of this small fraction of all pupils across classrooms becomes extremely important. Concentration on two grades weakens the effect of deviations from the probability of Title I pupils being in a classroom lower than the overall estimates of 80%. This conclusion, however, is not intuitively apparent. Consider the following example.

Let us suppose that we have two hypothetical school districts, one in which Title I pupils are spread over 80% of all classrooms in all school grades. The second school district, having made the decision to homogeneously group students according to ability level, places all Title I pupils within approximately 20% of all classrooms. Given a reasonable sampling fraction, and a hundred classrooms, it can be shown that the random representation of the Title I pupils in some sample of the second school district classrooms would be one-fourth that of the first. Hence, since this study was generally interested in *comparing pupil groups* selected from the *sampled classrooms*, very large samples of pupils would have to be selected from the few Title I classrooms in the second district. This was not a viable approach.

A final factor in favor of selecting two grades focused on the problems of grade definition in ungraded settings. Several of the demonstration school districts had non-standard classroom structures. For example, one school district grouped third, fourth, and fifth grade students within single classrooms, for *all* schools within the district. Identification and delineation of the sampling procedures in multi-grade classrooms, and ungraded settings, would have severely complicated a design which did not census all classrooms across some particular grade levels.

The foregoing factors clearly favor the two grade approach over the approach of sampling classrooms. Hence, the study staff chose to concentrate its resources and census the classrooms within two grade levels.

Decision Step Three - What Part Of The Grade Continuum Should Be Focused Upon

Examination of the Title I programs in the sixteen demonstration districts and analysis of national Title I expenditure patterns led to the following observations. First, the Title I programs ranged across all twelve grades and in some instances existed in kindergarten and pre-school settings. In spite of the coverage of all grades by the Title I programs, elementary school programs consumed most of the dollar resources spent by the sixteen districts. An analysis of 12 of the 16 demonstration Title I school district budgets for the 1975-76 school year showed that approximately 75% of all Title I monies were spent for elementary programs and services. The number of pupils served by the programs was approximately equal for elementary and secondary pupils. Secondary programs tend to be low cost services to large numbers of pupils, while elementary programs tend to be intensive services, primarily basic skill programs, focused on a limited number of pupils. These trends within the demonstration districts reflected similar trends in Title I aid nationally.[7]

In addition to these observations, all of the proposed programmatic and distributional changes being proposed by the 16 demonstration districts were in the elementary grades. The demonstration school districts were proposing to alter the breadth and scope of elementary Title I programs, or distribute these programs among a larger number of schools and pupils. In three cases, school districts were proposing to specifically reallocate secondary expenditures in order to increase funds available to elementary pupils.

The foregoing observations concerned characteristics of local and national school district expenditures as well as the initial proposed plans of the sixteen demonstration districts.

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[7] See A Partial Listing of State Reports, The Division for the Disadvantaged, Bureau of School Systems, O.E.O, Washington, D.C., March 1976.

In addition to these general factors, a second set of practical considerations entered into the decision as to whether to focus on all grades or some subset of the grade structure. There is a marked difference between the structure, organization, and programmatic characteristics of elementary and secondary schools and programs. Questionnaires probing programmatic areas are rarely applicable to both elementary and secondary situations. Similarly, principal and specialist questionnaire supplements for secondary personnel would be significantly different than those for elementary principals and specialists. Hence, were the study to focus on both elementary and secondary grades, the number of instruments would be greatly increased. Comparability of items, concepts, and measurement from elementary to secondary grades would also have been problemmatic. Local and national expenditure emphasis, and the proposed programmatic changes of the sixteen demonstration districts, pointed toward the decision to limit the study to elementary grades. The decision was thus made to limit the study to the elementary grades.

This decision resulted in the need to define elementary grades. Several of the school districts within the study contained non-standard grade segregation patterns. For example, one school district had a number of fifth-grade only schools. Two other districts frequently moved the sixth grade from elementary schools to the junior high school level. A consideration of these observed patterns led to the following definition. All schools containing grades one, two, three, four, or five were defined as elementary schools. If the sixth grade was associated with or contained in a school with the fifth grade or lower, that school was also defined as an elementary school. This definition was applied across all sixteen school districts and was found to be consistent with the organizational arrangements.

Decision Step Four - What Grades Should be Selected

Given the decision to concentrate on two elementary grades, the study next confronted the decision of which two elementary grades to select. The first phase of this decision-making process consisted of the a priori elimination of three elementary grade levels from consideration. First and sixth grades were eliminated based on the transitional nature of these particular grade levels. (First grade is the transition between pre-school and elementary school, and sixth grade is often found in junior high school curriculum and facilities.) Kindergarten was eliminated because this particular elementary level is present in only a fraction of the sixteen demonstration districts, and is clearly a transition between the home and school. Generally, transition environments were viewed as situations problematic to study, and subject to fluctuations extraneous to the objectives of our study of the Title I programs.

Three criteria were developed for selecting among the four remaining elementary grade levels. First, it was decided to select grades which typified program variation within these four grade levels. (For example, if program organization changed between grades X and Y, inclusion of X and Y within the study would maximize the coverage of the study across program elements.) The second criteria was coincidence of the grades selected with observed patterns in school organization. In particular, it was observed that grades two and five tended to fall within unusual organization patterns in the sixteen districts. In particular, the fifth grade level frequently fell within organization patterns such as five and six only, and two and five only elementary school situations. In addition to these empirical factors, the importance of a distinction often made by educators in discussing elementary education was viewed as important by study staff. Specifically, elementary school is often termed as having two major sub-components: lower elementary (comprising grades one through three) and upper elementary (comprising grades four through six). This subdivision of elementary grades is often referred to as representative of certain discontinuities in the development pattern of youth. Certain programmatic and learning theory approaches often differentiate between these two sub-components. The patterns of programmatic organization of the demonstration districts paralleled this basic subdivision. Many of the Title I programs of the sixteen districts differed significantly between third and fourth grade.

Finally, the issue of non-response entered into the consideration of the selection of two particular grades. Should total district or within grade non-response occur, pooling of the two selected grades within or across districts might be necessary. For example, should grades two and five be selected and the teachers within grade 2 exhibit a significantly higher non-response rate than those in grade 5, particularly within a small district, the pooling of estimates of data between the two grades might be necessitated in order to test mean difference hypotheses between the two selected grade levels with sufficient power. It was the opinion of the study staff that the pooling of non-contiguous grades would lack "face validity". In short, selection of two contiguous grades (two and three, three and four, four and five) would allow the study to pool estimates of programmatic distribution and emphasis whereas selection of such pairs as grades two and five would jeapordize such pooling.

The selection of grades three and four proved to be the optimal way of satisfying the above set of criteria. This choice allowed the study to contain one grade from the upper and one from the lower elementary schools, while simultaneously utilizing two contiguous grades. In addition, the Title I programmatic variation, and the observed organizational variation were congruent in the sense that the distinction between third and fourth grades was the largest of contiguous elementary grade levels.

It should be noted in concluding that this decision causes the study to focus in some districts on grades where Title I emphasis is somewhat less than in other grades. However, this is unavoidable. Any sampling approach which selected different pairs of grades within a district based on individual district Title I programs, would have both severely complicated cross-district comparability, and created resource consuming instrumentation problems. In addition, fluctuation across years in terms of grade level interest would have been serious if such an approach had been taken. On balance alternatives to uniform selection of a pair of contiguous grades across the sixteen districts were extremely unattractive.

Decision Step Five - Selection Within Classrooms

The most desirable approach to pupil selection is to choose pupils on the basis of a set of characteristics linked to the major objectives of the study. Selection on the basis of achievement was attractive because of the relevance of achievement to the basic philosophy behind compensatory programs such as Title I. However, this preferred solution was not available to this study for a variety of reasons.

The pupil selection decision resulted from a complex but compelling set of practical and technical considerations that prohibited the most desirable solution. The major practical consideration centered on the non-availability of affordable standardized achievement scores for sampling purposes. Even in the most sophisticated districts (from a data management standpoint), sufficient records regarding pupil achievement scores are not generally available until spring of each school year, if at all. Several districts did not test in the fall. The major cost-feasible alternative, asking teachers to locate and transcribe standardized achievement scores for sampling purposes, would again require that the data be available and would still often lead to inadequate results even with the best teacher efforts. The already high teacher response burden was also a concern in considering this alternative. Therefore, any sampling plan that necessitated knowledge of the standardized reading achievement scores prior to drawing the sample was deemed extremely problematical. Hence, a simple random selection approach, with adequate attention to expected sample sizes, was a preferable alternative from an implementation viewpoint.

Pre- and Pilot testing of the Classroom Activities Log, and analysis of the aggregate response burden on teachers, strongly suggested that asking teachers to complete questionnaires for more than two pupils would seriously jeopardize the probability of obtaining teacher cooperation, as well as negatively affecting the quality of the data collected. If a class does not contain a Title I pupil, two students will be selected at random from the class. If one or more Title I students are in the class, one student will be randomly selected from among the Title I pupils, and one from among those pupils not receiving Title I services. The results of this selection process can be summarized in the following manner. From the perspective of the study, there will be three pupil groups:

- Pupils receiving Title I services,
- Under-achieving pupils not receiving Title I services, and
- Achieving pupils not receiving Title I.

A definition of pupils receiving Title I services is clear: either a pupil does or does not receive such services.

Definition of under-achieving pupils versus achieving pupils is not as clear. In the fall of 1975, the mean achievement level for the sixteen districts was approximately the fortieth percentile on standardized achievement tests. Hence, for definitional purposes, under- and over-achieving will be defined in terms of this norm.

It should be emphasized that only pupils in Title I schools can receive Title I services. The remaining groups of under- and over-achieving pupils exist both in Title I schools and in the two other school strata. However, for purposes of this study these are the same three pupil groups simply occurring in a different type of school.

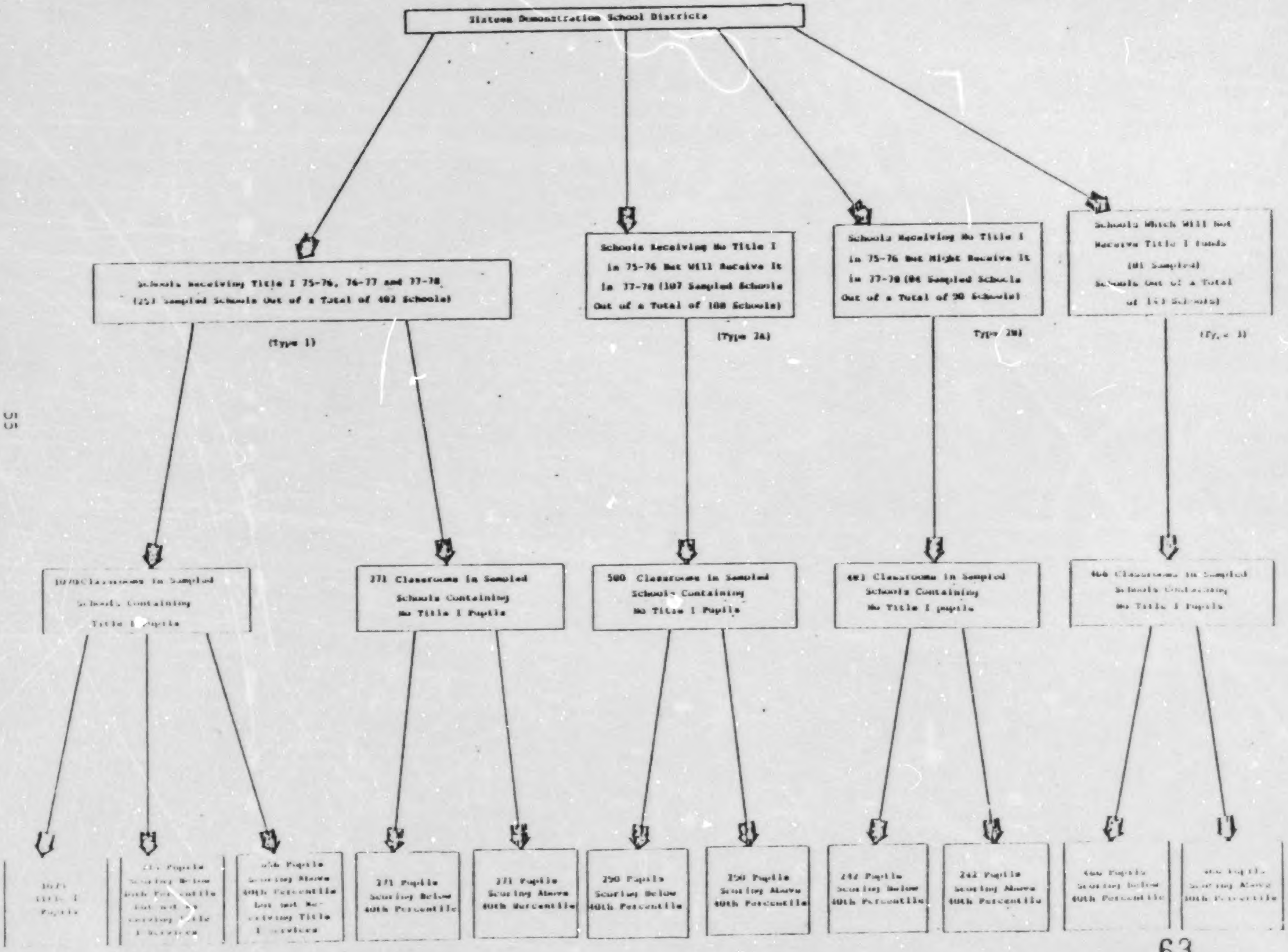
Given the three pupil groups of interest, lack of information on standardized achievement scores, and the Classroom Activities Log pilot test experience, the decision was made to randomly select two pupils per classroom from within the pupil groups.

3.2.3.2 Details of the Sampling Plan

A two-stage cluster sampling plan evolved from the foregoing decisions. The plan, and the associated estimated general sample sizes, are summarized in Figure 3-1 and explained in detail in the following sections. As the figure shows, the first step involved classification of elementary schools within the districts into the three major school sample strata. The second step was the censusing of all third and fourth grade classrooms within the sampled schools, and the random selection of two students from the pupils groups present in the sampled classrooms. The reader is urged to refer frequently to Figure 3-1 while reading the following sections.

Selecting the School Sample

The first step in selecting the school sample consisted of gaining information on the characteristics of the sixteen demonstration school districts. This information was gathered prior to the submission of the draft instruments for Office of Management and Budget (OMB) clearance in early December. Because of the evolving nature of information


Sixteen Demonstration School Districts
Schools Receiving Title I 75-76, 76-77 and 77-78 (251 Sampled Schools Out of a Total of 402 Schools)
(Type 1)
Schools Receiving No Title I in 75-76 But Will Receive It in 77-78 (107 Sampled Schools Out of a Total of 108 Schools)
(Type 2A)
Schools Receiving No Title I in 75-76 But Might Receive It in 77-78 (84 Sampled Schools Out of a Total of 90 Schools)
Type 2B)
Schools Which Will Not Receive Title I Funds (81 Sampled) Schools Out of a Total of 141 Schools)
(Type 3)
1070 Classrooms in Sampled Schools Containing Title I Pupils
271 Classrooms in Sampled Schools Containing No Title I Pupils
500 Classrooms in Sampled Schools Containing No Title I Pupils
483 Classrooms in Sampled Schools Containing No Title I pupils
466 Classrooms in Sampled Schools Containing No Title I Pupils
1071 Title I Pupils
215 Pupils Scoring Below 40th Percentile but not Receiving Title I Services
656 Pupils Scoring Above 40th Percentile but not Receiving Title I Services
271 Pupils Scoring Below 40th Percentile
271 Pupils Scoring Above 40th Percentile
250 Pupils Scoring Below 40th Percentile
250 Pupils Scoring Above 40th Percentile
242 Pupils Scoring Below 40th Percentile
242 Pupils Scoring Above 40th Percentile
466 Pupils Scoring Below 40th Percentile
466 Pupils Scoring Above 40th Percentile

available to the study, and continuing changes in the plans of the districts, these estimates have been updated. The basic school district data available at the time of the OMB submission (12-10-75), the data currently in hand (3-27-76), and the differences between these two estimates, are contained in Table 3-5.

As the table indicates, estimates for several districts have changed considerably. The estimates of schools to receive Title I funds in the implementation years which are not currently receiving funds have been a source of considerable uncertainty. For example, when this plan was prepared, five districts were still unable to identify the exact schools to be included in the 1976-77 school year. However, it was possible to identify in these five districts the "pool" of schools from which these demonstration schools will be selected. Because of the small relative proportion of all schools that these schools represent, plus the relevance of these schools to all study hypotheses, the decision was made to go to all of these "pool" schools. Hence, it is not expected that 191 schools will actually be included in the demonstration in the second year of the study. However, it is impossible to ascertain the exact number at this time, although the most conservative estimate would seem to be no fewer than approximately 150 schools.

Determination of the Number of Schools to be Sampled

The sixteen demonstration school districts constitute the fundamental focus of the study. Within each district a two-stage cluster sample will be selected which will permit inferences to be drawn about that district. The first stage of the plan is to choose a sample of elementary schools within each district. The second stage is to select a sample of third and fourth grade pupils within each selected school.

The sampling will be conducted so that equally precise estimates can be obtained for each district. This

Table 3-5

ESTIMATED POPULATION OF DEMONSTRATION DISTRICTS: SELECTED CHARACTERISTICS

Demonstration Districts	Total Elementary Schools			Total Elementary Teachers			Total Elementary Reading and Math Specialists			Total Elementary Pupils			Mean Student Size of Elementary Schools		
	12-10-75 Estimates	3-17-76 Estimates	Differences (76-75)	12-10-75 Estimates	3-17-76 Estimates	Differences (76-75)	12-10-75 Estimates	3-17-76 Estimates	Differences (76-75)	12-10-75 Estimates	3-17-76 Estimates	Differences (76-75)	12-10-75 Estimates	3-17-76 Estimates	Differences (76-75)
Mesa, AZ	25	25	0	632	632	0	38	32	-6	15,181	15,181	0	607	607	0
Adams County, CO	18	16	-2	374	374	0	3	9	6	9,000	9,000	0	560	563	63
Wichita, KS	79	77	-2	890	890	0	36	19	-17	32,347	32,347	0	385	393	8
Boston, MA	156	137	-19	2563	2563	0	328	370	42	60,375	60,375	0	444	587	143
Charlotte, NC	73	73	0	1775	1775	0	115	163	48	46,375	46,375	0	600	604	4
Winston-Salem, NC	33	37	4	671	671	0	33	41	8	22,646	22,646	0	686	662	-24
Santa Fe, NM	16	16	0	263	263	0	17	5	-12	5,713	5,713	0	357	357	0
Freeport, NY	8	6	-2	300	300	0	12	14	2	4,172	4,172	0	695	834	139
Yonkers, NY	38	38	0	550	550	0	117	52	-65	13,750	13,750	0	444	444	0
Oklahoma City, OK	88	88	0	1037	1037	0	60	82	22	18,896	18,896	0	233	233	0
Newport, RI	11	9	-2	110	110	0	15	14	-1	3,284	3,284	0	200	220	20
Houston, TX	170	169	-1	5071	5071	0	244	387	143	135,879	135,879	0	793	799	6
Berkeley County, WVA	13	14	1	335	335	0	9	9	0	6,110	6,110	0	470	436	-34
Harrison County, WVA	31	30	-1	300	300	0	25	19	-6	7,300	7,300	0	248	257	9
Racine, WI	22	28	6	500	500	0	13	16	3	12,700	12,700	0	577	454	-123
Allen Parish, LA	20	19	-1	400	400	0	21	15	-6	10,000	10,000	0	500	526	26
TOTAL	785	765	-20	16,446	16,446	0	1,020	1,170	150	390,327	390,327	0	478	489	11

Note: The estimates in this table are based on information available to Abt Associates Inc. on March 17, 1976.

means that more schools must be sampled in larger districts than in smaller ones. For example, in a school district composed of seventeen elementary schools, a good estimate can be obtained by sampling only eleven, whereas if the school district has seventy-one schools a sample of thirty-five will be needed to achieve a comparable estimate. Thus, even if some of the school districts withdrew from the study equally accurate estimates can be obtained for the remaining schools.

The accuracy of estimates in a school district depends upon the fraction, $f = n/N$, of the schools sampled in that district. N is the total number of elementary schools in the district and n is the number in the sample.

The accuracy also depends upon σ, the standard deviation of each school measurement. This assumes that σ is the same from school to school. Sometimes this will not be the case but because the distribution and characteristics of classrooms within districts and school types is unknown at this time the assumption of equal σ is most reasonable for estimating sample size.

The variance of estimates within a district is given by

$$(1 - f) \frac{\sigma^2}{n} .$$

The sample size n will be selected so that if σ remains the same from district to district this variance will also be the same. In particular the 95% confidence interval for the mean is approximately given by

$$\bar{x} \pm 2 \sqrt{(1-f)} \frac{\sigma}{n} .$$

(The design effect of the clustering of the sample is assumed to be negligible.) n will be chosen so that the length of the confidence interval, $4 \sqrt{(1-f)} \frac{\sigma}{\sqrt{n}}$, is equal to $\frac{\sigma}{2}$. In other words

$$\frac{\sigma}{2} = 4 \sqrt{(1-f)} \frac{\sigma}{\sqrt{n}} .$$

Solving this equation gives the sample size as

$$n = \frac{64N}{N + 64} .$$

Selection of σ/2 as the length of the confidence interval is arbitrary. However, considerable precedent exists for this choice. For example, the national study of the effects of Follow-Through employs this particular value.[8]

After schools have been sampled, third and fourth grade classrooms will be censused within schools and second stage sample of pupils selected within each classroom. Selection of classrooms from within schools creates two possible analytic problems. First, if there are large differences in mean class size within and across school districts, it will be necessary to weight variance estimates based on the sample of pupils. The complexity of these procedures and the effects of these on ability of the study to estimate means and detect differences are difficult to consider in the absence of actual data. (It should be noted that it was impossible prior to the implementation of the first year's data collection to obtain classroom lists with absolute classroom size and numbers of Title I pupils. Had these been available, the school level approach would have been unnecessary.)

The second way in which this approach may become problematic is if there is a large within and across district variation in the number of Title I pupils within sample classrooms. For example, if in a particular district a large number of the classrooms contain only one Title I pupil, while other classrooms contain 75% or more Title I pupils, weighting procedures will have to be introduced into the estimation procedures before group means may be calculated. This results because a single Title I child in a class with non-Title I children is bound to be selected whereas if there are many Title I children in a class any one of this number may be chosen. As was the case with the source of potential problems described in the previous paragraph, the magnitude of this particular problem cannot be estimated in advance. The expectation of the study staff, given the limited data in hand, is that this will not become a serious problem and that the variance in classroom size and representation of Title I children will be small.

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[8] *Education as Experimentation: A Planned Variation Model. Volume IIIB*. Abt Associates Inc. Office of Education OE Contract No. 300-75-0134 Draft Report, March 1976, pp. 4-13.

Selecting the Sampled Schools

The actual schools to participate in the study were selected during January, 1976. Lists were developed which sorted all elementary schools within each district into schools containing third and fourth grades for each of the three school types. The necessary sample size was then calculated for each stratum within each district. Schools were then numbered, and randomly selected using random numbers selected from a standard two-place random number table. The starting number of the random sequence within the table was determined by selecting a random number.

The total number of schools, the sizes of school samples, and the sample sizes for the sixteen districts are shown in Table 3-6. This table also contains the estimates, at the time of the OMB submission the current information, and the differences. As an examination of the table will reveal, a variety of factors, in some cases actual changes in school district plans, resulted in a substantial number of differences between the December 1975 and March 1976 estimates. (It should be noted that the total number of schools represented in this table is slightly less than the total number of elementary schools in the sixteen districts. Schools that did not contain third or fourth grade were eliminated from consideration.)

Generally, the effects of errors in key sampling information on overall expected sample sizes have not been

TABLE 1-6

ESTIMATED SAMPLE SIZES FOR FIRST STAGE SAMPLING UNIT
(ELEMENTARY SCHOOLS) BY SCHOOL TYPE: TOTAL AND SAMPLE*

Demonstration Districts	School Type																		Total Across All School Types					
	Schools With Title I 75-76 and 76-77						Schools Without Title I 75-76 but with it in 76-77						Schools Without Title I 75-76 and 76-77											
	12-10-75 Estimates		3-27-76 Estimates		Differences (76-75)		12-10-75 Estimates		3-27-76 Estimates		Differences (76-75)		12-10-75 Estimates		3-27-76 Estimates		Differences (76-75)		12-10-75 Estimates		3-27-76 Estimates		Differences (76-75)	
	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample	Total	Sample
Mesa, AZ	11	10	13	13	2	3	14	12	9	9	-5	-3	0	0	3	3	3	3	25	22	25	25	0	3
Adams County, CO	8	8	3	3	-5	-5	10	10	13	13	3	3	0	0	0	0	0	0	18	18	16	16	-2	-2
Wichita, KS	31	34	31	35	0	1	6	6	5	5	-1	-1	2	2	1	1	-1	-1	39	42	37	41	-2	-1
Boston, MA	85	30	66	26	-20	-4	9	9	20	20	11	11	52	20	31	22	-21	-3	136	77	117	77	-19	0
Charlotte, NC	47	28	49	28	2	0	15	13	(24)	(24)	9	11	15	10	0	0	-15	-10	77	50	73	52	0	2
Winston-Salem, NC	13	11	17	11	4	0	10	10	(20)	(15)	10	5	10	10	0	0	-10	-10	33	31	37	26	4	-5
Santa Fe, NM	11	10	11	11	0	1	5	5	5	5	0	0	0	0	0	0	0	0	16	15	16	16	0	1
Freeport, NY	6	6	4	4	-2	-2	0	0	0	0	0	0	0	0	0	0	0	0	6	6	4	4	-2	-2
Yonkers, NY	0	0	0	0	0	0	1	1	(31)	(31)	31	31	31	26	0	0	-31	-26	31	26	31	31	0	5
Oklahoma City, OK	60	33	48	28	-12	-5	12	11	6	6	-6	-5	9	9	27	18	18	9	81	53	81	52	0	-1
Newport, RI	5	5	3	3	-2	-2	0	0	(6)	(6)	6	6	5	5	0	0	-5	-5	11	10	9	10	-2	0
Houston, TX	56	30	54	30	-2	0	10	14	24	24	14	20	64	30	81	36	-15	-3	130	83	162	100	-1	17
Berkeley County, WVA	11	10	10	10	-1	0	2	2	2	1	0	-1	0	0	1	1	1	1	13	12	13	12	0	0
Harrison County, WVA	25	10	25	10	0	0	6	6	5	5	-1	-1	0	0	0	0	0	0	31	26	30	33	-1	-1
Racine, WI	10	10	9	9	0	-1	5	5	(18)	(17)	13	12	7	7	0	0	-7	-7	22	22	26	26	6	4
Alum Rock, CA	20	14	10	10	-10	-6	0	0	9	9	9	9	0	0	0	0	0	0	20	16	19	19	-1	3
TOTAL	530	276	482	257	-53	-19	113	103	196	191	83	88	213	127	144	61	-69	-66	705	506	765	530	-40	22

* Numbers contained in parentheses are "pools" from which some schools will become Demonstration Schools. See Text for full explanation.

Note: The estimates in this table are based on information available to Abt Associates Inc. on March 23, 1976.

substantial to date. However, errors in the key sampling information, or significant changes in school system plans can have a large effect on the study. (A discussion of some of these possibilities and the consequences thereof is contained in Appendix C.

Only two exceptions were made to the general rules governing school sample selection. First, because of the uncertain conditions surrounding "pools" of Type II schools, all potential Type II schools in the five districts where uncertain conditions existed were included in the sample. Had this not been done, the study might have become vulnerable in later years to under-representation of the schools occupying the crucial Type II status. The second deviation from the general sampling plan at the school level involved inclusion of all schools in those few cells where sample and population sizes were almost equal. In several school districts the sampling procedures would have led to the inclusion of eleven of the twelve schools in the district. In such instances, because of the difficulties of implementing procedures to establish and of maintaining field relationships with school district and school level personnel, the decision was made to include in the sample all school in the district. Generally, the cost of the inclusion of one additional school far outweighed the cost associated with explaining the omission of one particular school within the district or school type. These "practical" adjustments in the sampling plan increase the sample size and generally have a positive effect fect on the study. (It should be noted that the discussion contained in this sampling section focuses on the services-received component of the study. For estimates of services delivered, principals and reading and math specialists were surveyed. The information gained from these supplementary samples is necessary for other study objectives but is irrelevant to the design of the services received component.)

Classroom Selection Procedures

All 3rd and 4th grade classrooms contained in the sample schools were included within this study, with the following exceptions:

- Classrooms containing exclusively mentally, emotionally, or physically handicapped pupils, and
- Those few classrooms containing exclusively pupils with extremely limited English skills (children of recent immigrants).

The incidence of these exceptions was extremely limited. The expected classroom size can be found in Table 3-7.

Pupil Selection

Pupil selection was accomplished through Classroom Rosters completed by all third and fourth grade classroom teachers. On these rosters teachers listed all pupils in the classroom, whether they received Title I services, and certain other information. Upon return of these rosters to Cambridge, one pupil and an alternative to cover pupil attrition, were randomly selected from each group (Title I and non-Title I), if both groups were present in a given classroom. If the classroom was either all Title I pupils or all non-Title I pupils, two pupils and their alternatives were randomly selected from the entire class.

Replacement procedures for pupils are necessary because of the reality of pupil attrition. The replacement procedures are straightforward. If a given pupil is transferred from a sampled classroom, he/she will be replaced by the preselected random alternate from the pupil group of interest. Given the relatively short calendar schedule for the 1975-76 data collection effort, it is anticipated that the percent of pupils requiring replacement will be small. Effects of this replacement on the estimation of parameters of interest is negligible. Pupils are being used in this study to estimate pupil group means, not as estimators of individual pupil change. However attention will be paid to the characteristics of those pupils who move out of the study to check this assumption.

Table 3-7

ESTIMATED NUMBER OF CLASSROOMS WITHIN SAMPLE SCHOOLS: SUM GRADES 3 AND 4

Demonstration Districts	Total Schools in Sample			Estimated Total Number of Classrooms in Sample Schools		
	12-10-75 Estimates	3-27-76 Estimates	Differences (76-75)	12-10-75 Estimates	3-26-76 Estimates	Differences (76-75)
Mesa, AZ	22	25	3	171	142	- 29
Adams County, CO	18	16	- 2	100	94	- 6
Wichita, KS	43	41	- 2	138	161	23
Boston, MA	77	77	0	360	347	- 13
Charlotte, NC	50	52	2	347	266	- 81
Winston-Salem, NC	31	26	- 5	208	236	28
Santa Fe, NM	15	16	1	70	88	18
Freeport, NY	6	4	- 2	58	43	- 15
Yonkers, NY	26	31	5	132	132	0
Oklahoma City, OK	53	52	- 1	194	221	27
Newport, RI	10	9	- 1	32	29	- 3
Houston, TX	83	100	17	831	711	-120
Berkeley County, WVA	12	13	1	62	61	- 1
Harrison County, WVA	24	23	- 1	83	81	- 2
Racine, WS	22	26	4	147	153	6
Alum Rock, CA	16	19	3	34	136	102
TOTAL	508	530	22	2967	2901	- 66

Note: The estimates in this table are based on information available to Abt Associates Inc. on March 27, 1976.

Summary of Expected Pupil Sample Sizes

The expected sample sizes resulting from the sampling plan fall into the 23 cells represented in Table 3-8. This table summarizes the general sampling design framework with regard to services received. The actual current expectations for each of these cells for the 16 districts and the aggregate thereof, are presented in Table 3-9. The districts have been presented in this latter table ranked from smallest to largest. The effect of non-response and school district attrition on these estimates is discussed in Appendix C of this plan.

As an examination of the table will reveal, the cell sizes within individual districts vary considerably, the absolute value of the non-zero cells ranging from 2 to 242. Although the sampling plan outlined in the preceeding sections is primarily directed toward producing adequate sample sizes at the aggregate cross-district level, comparisons between certain cells within some of the larger districts is possible. In the absence of specific information regarding variability in the population, actual sample sizes and other specifics, the notion of statistical power is the most useful concept for discussing how adequate these estimated cell sample sizes within district comparisons are. Cohen* writes, "The power of a statistical test of a null hypothesis is the probability that it will lead to the rejection of the null hypothesis....." In turn, the power of an individual statistical test depends upon the significance criterion (critical region), reliability of sample results (standard error), and the effect size (usually in terms of standard deviations) on the population of interest. For example, assume that we wish a significance criterion of .05 and an effect size of .3 standard deviaion. With these givens, it is possible to calculate the power of t-test for the difference of two equal size cell means. If we wish to

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* Jacob Cohen. Statistical Power Analysis for the Behavioral Sciences. New York: Academix Press, 1969., p.4

TABLE 3-8

SUMMARY OF PROBABLE PUPIL SAMPLE SIZE
PER GENERAL STUDY DESIGN
CELL: SERVICES RECEIVED

School Type (S)	School Year (Y)								
	1975-76			1976-77			1977-78		
	Pupil Type (P)			Pupil Type (P)			Pupil Type (P)		
	Pupils Rec'g Title I	Under-Achieving Pupils Not Rec'g Title I(*)	Achieving Pupils Not Rec'g Title I	Pupils Rec'g Title I	Under-Achieving Pupils Not Rec'g Title I(*)	Achieving Pupils Not Rec'g Title I	Pupils Rec'g Title I	Under-Achieving Pupils Not Rec'g Title I(*)	Achieving Pupils Not Rec'g Title I
Schools Receiving Title I all three years	$S_1Y_1P_1$	$S_1Y_1P_2$	$S_1Y_1P_3$	$S_1Y_2P_1$	$S_1Y_2P_2$	$S_1Y_2P_3$	$S_1Y_3P_1$	$S_1Y_3P_2$	$S_1Y_3P_3$
Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	**	$S_2Y_1P_2$	$S_2Y_1P_3$	$S_2Y_2P_1$	$S_2Y_2P_2$	$S_2Y_2P_3$	$S_2Y_3P_1$	$S_2Y_3P_2$	$S_2Y_3P_3$
Schools Never Receiving Title I Services	**	$S_3Y_1P_2$	$S_3Y_1P_3$	**	$S_3Y_2P_2$	$S_3Y_2P_3$	**	$S_3Y_3P_2$	$S_3Y_3P_3$

(*) Underachieving Pupils not receiving Title I are those pupils scoring at or below the 40th percentile on a standardized reading achievement test.

(**) These cells by definition cannot exist.

SUMMARY OF PROBABLE PUPIL GROUP SAMPLE SIZE FOR
CAUSAL STUDY DESIGN CELLS:
BY SCHOOL DISTRICT [illegible]
TOTAL SAMPLE SIZE

Demonstration District	School Type	School Year								
		1975-76			1976-77			1977-78		
		Pupil Group			Pupil Group			Pupil Group		
		Pupils Rec'g Title I	Under-Achieving Pupils Not Rec'g Title I(*)	Achieving Pupils Not Rec'g Title I	Pupils Rec'g Title I	Under-Achieving Pupils Not Rec'g Title I(*)	Achieving Pupils Not Rec'g Title I	Pupils Rec'g Title I	Under-Achieving Pupils Not Rec'g Title I (*)	Achieving Pupils Not Rec'g Title I
Newport, RI **	Schools Receiving Title I all 3 years	7	2	9	7	2	9	7	2	9
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	30	30	16	4	30	16	4	30
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	
Freeport, NY	Schools Receiving Title I all 3 years	36	9	65	36	9	65	36	9	65
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	-	-	-	-	-	-	-	-
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	-
Berkeley County, WVA	Schools Receiving Title I all 3 years	48	10	58	48	10	58	48	10	58
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	3	3	6	1	3	6	3	3
	Schools Never Receiving Title I Services	-	5	3	-	5	3	-	3	5
Harrison County, WVA	Schools Receiving Title I all 3 years	50	13	63	50	13	63	50	13	63
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	18	18	16	6	18	16	6	18
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	-
Santa Fe, NM	Schools Receiving Title I all 3 years	40	12	65	12	40	65	40	12	65
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	30	30	22	6	30	22	6	30
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	-
Adams County, CO	Schools Receiving Title I all 3 years	16	6	18	16	6	18	16	6	18
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	76	76	65	15	76	65	15	76
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	-
Yonkers, NY **	Schools Receiving Title I all 3 years	30	0	30	30	0	30	30	0	30
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	19	94	75	94	94	75	19	94
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	-
Alum Rock, CA	Schools Receiving Title I all 3 years	58	16	72	58	16	72	58	16	72
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	66	66	33	11	66	33	13	66
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	-

*Underachieving pupils not receiving Title I are those pupils scoring at or below the 40th percentile on a standardized reading test [illegible]

Table [illegible] (continued)

Demonstration District	School Type	School Year 1975-76 Pupil Group: Pupils Rec'g Title I	1975-76: Under-achieving Pupils Not Rec'g Title I(*)	1975-76: Achieving Pupils Not Rec'g Title I	1976-77 Pupil Group: Pupils Rec'g Title I	1976-77: Under-achieving Pupils Not Rec'g Title I(*)	1976-77: Achieving Pupils Not Rec'g Title I	1977-78 Pupil Group: Pupils Rec'g Title I	1977-78: Under-achieving Pupils Not Rec'g Title I(*)	1977-78: Achieving Pupils Not Rec'g Title I
[illegible]	Schools Receiving Title I all 3 years	19	13	74	19	13	74	19	13	74
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	11	11	41	13	11	41	13	11
	Schools Never Receiving Title I Services	-	17	17	-	17	17	-	17	17
[illegible] **	Schools Receiving Title I all 3 years	42	11	33	42	11	33	42	11	33
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	108	108	90	18	108	90	18	108
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	-
Wichita, KS	Schools Receiving Title I all 3 years	113	17	137	113	17	137	113	17	137
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	20	20	14	6	13	14	6	13
	Schools Never Receiving Title I Services	-	6	6	-	6	6	-	6	6
Oklahoma City, OK	Schools Receiving Title I all 3 years	96	12	108	96	12	108	96	12	108
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	18	18	12	6	20	12	6	18
	Schools Never Receiving Title I Services	-	65	65	-	65	65	-	65	65
Winston-Salem, NC **	Schools Receiving Title I all 3 years	98	20	108	98	20	108	98	20	108
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	126	126	109	17	126	109	17	126
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	-
Charleston, SC **	Schools Receiving Title I all 3 years	114	79	143	114	79	143	114	79	143
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	123	123	98	25	123	98	25	123
	Schools Never Receiving Title I Services	-	-	-	-	-	-	-	-	-
Boston, MA	Schools Receiving Title I all 3 years	128	12	138	128	12	138	128	12	138
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	90	90	73	18	90	73	18	90
	Schools Never Receiving Title I Services	-	79	79	-	79	79	-	79	79
Houston, TX	Schools Receiving Title I all 3 years	170	43	213	170	43	213	170	43	213
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	142	142	134	48	142	134	48	142
	Schools Never Receiving Title I Services	-	156	156	-	156	156	-	156	156
TOTAL-all 16 Districts	Schools Receiving Title I all 3 years	1078	171	1241	1078	171	1241	1078	171	1241
	Schools Receiving Title I Services in Implementation Years (76-77 and 77-78) only	-	1268	1299	873	128	1299	873	128	1299
	Schools Never Receiving Title I Services	-	466	466	-	466	466	-	466	466

*Underachieving Pupils not receiving Title I are those pupils scoring at or below the 40th percentile on a standardized reading achievement test.

**Estimates assume all "need" schools become demonstration schools.

Table 3-10

POWER OF t TEST FOR COMPARISON OF THE EQUALITY OF TWO EQUAL SIZED GROUP MEANS FOR VARYING SAMPLE SIZES AND EFFECT SIZES* WITH A TWO TAILED .05 SIGNIFICANCE CRITERION**

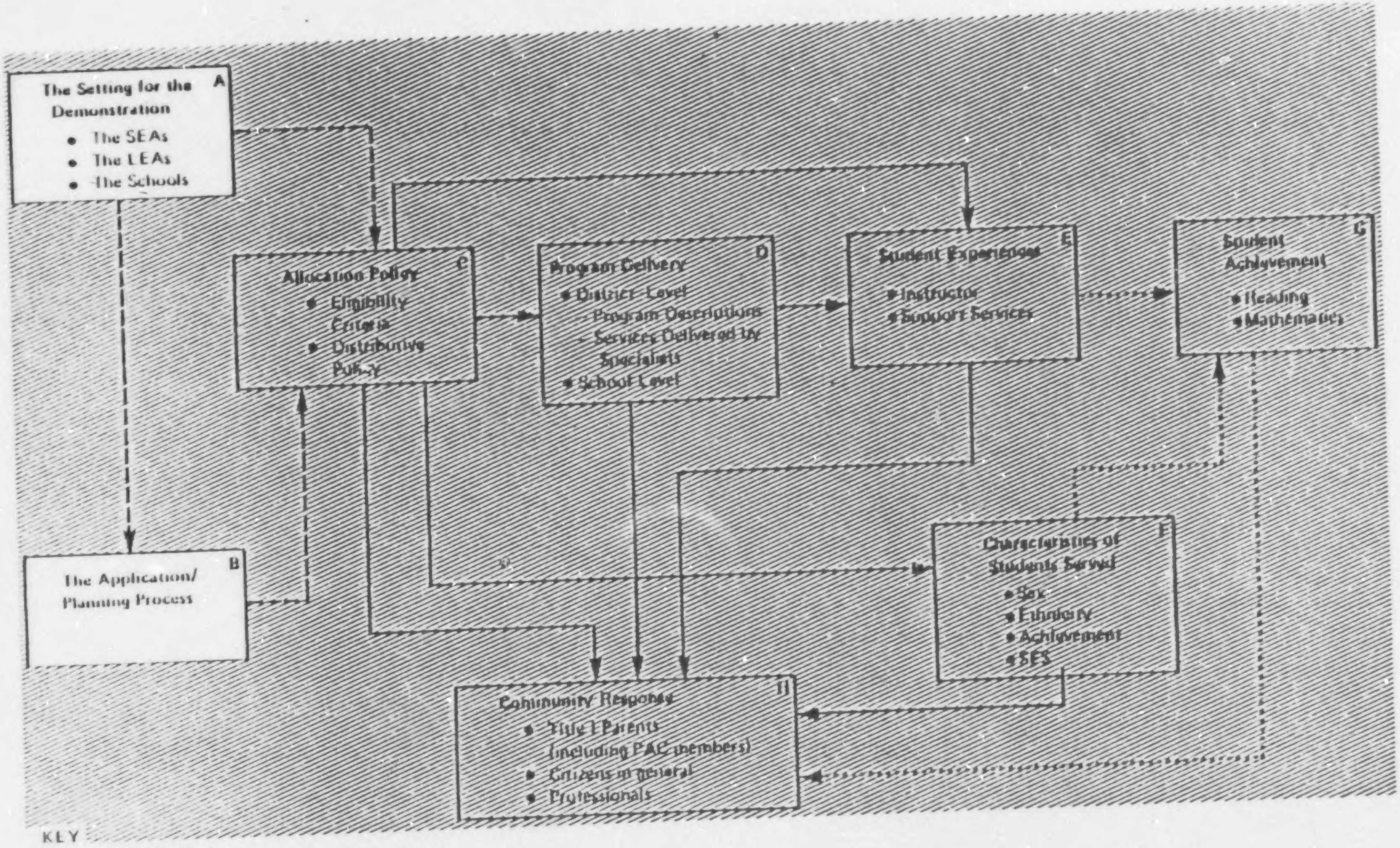
SAMPLE SIZE	EFFECT SIZE .2	.3	.4
10	07	10	13
15	08	12	18
20	09	15	23
25	11	18	28
30	12	21	33
35	13	23	38
40	14	26	42
50	17	32	50
60	19	37	58
76	23	45	69
80	24	47	71
96	28	54	79
100	29	56	80
120	34	64	87
140	38	71	92
160	43	76	95
180	47	81	97
200	51	85	98
250	61	92	99

* Effect Size is expressed in terms of standard deviations

** Values in this table from Cohen, supra, p. 34-35 contrast design cell $S_1Y_1P_1$ with $S_1Y_1P_2$ for a given district, the power of the test for the sample sizes relevant to the estimated values of these cells is shown in Table 3-10. Clearly, the statistical power of within school district comparisons is low for all but the largest school districts. This does not represent a major limitation of the study, since the primary study objectives are in terms of comparisons of pupil groups at the aggregate level.

In conclusion, it should be noted that the logic of this section has proceeded from the premise that observations on pupils are oriented towards estimates of properties of pupil groups. In six of the districts, the number of schools and classrooms is such that the sampling plan will lead to the sampling of all third and fourth grade classrooms. In such situations the argument could be made that the study "censused" all district classrooms of interest. If all units of a population are included in the sample, it can be argued that any differences observed in the resultant estimates are real (significant). For example, were the conceptual framework of the study to argue that the estimates associated with the two randomly selected pupils within each classroom were reliable estimates of some classroom level characteristic, districts in which all classrooms were represented could be said to be comparisons of population estimates. However, although this is the case in six of the districts involved in this study, this argument will not be put forth.

Chapter 4
THE CONTEXT


The Setting for the Demonstration
A
• The SEAs
• The LEAs
• The Schools
Allocation Policy
C
• Eligibility Criteria
• Distributive Policy
Program Delivery
D
• District Level
– Program Descriptions
– Services Delivered by Specialists
• School Level
Student Experiences
E
• Instructor
• Support Services
Student Achievement
G
• Reading
• Mathematics
The Application/ Planning Process
B
Characteristics of Students Served
F
• Sex
• Ethnicity
• Achievement
• SES
Community Response
H
• Title I Parents (including PAC members)
• Citizens in general
• Professionals

KEY

– – – – – Links to be analyzed conceptually

———— Links to be analyzed statistically for full range of districts

·········· Links to be analyzed statistically, where possible, for a subset of districts

4.0 THE CONTEXT

For purposes of analysis, we have divided the context of the Demonstration Study into two parts: the setting and the application and planning process. The setting includes characteristics of the State Educational Agencies (SEAs) and their mechanisms for regulating Title I, the demographic and bureaucratic characteristics of the Demonstration districts, and the characteristics of the schools within the districts. The application and planning process includes the history of the district selection process, as well as the actors and activities involved in the planning year. The distinction is somewhat arbitrary because both of these contextual components provide a background for the study, shed light on the issue of selectivity, and may be seen as potential mediators for allocation policy decisions and other study outcomes.

The differentiation is made for two reasons. First, the setting is viewed as relatively unchangeable in contrast to application and planning procedures, which are seen as manipulable. Demographic characteristics are by nature fixed, if not constant, and while certain organizational variables may be manipulable, they are somewhat removed from the policy concerns of this research. Since Title I is a large-scale social program, it is unlikely that the policy options suggested by this research would be applied selectively on the basis of demographic or organizational characteristics or that manipulating such characteristics on a broad scale would be feasible. On the other hand, application and planning procedures are subject to manipulation by policy makers. Identification of "successful" application and planning procedures can be useful in developing guidelines or recommendations for districts seeking to replicate demonstrations similar to those of these 16 districts.

Secondly, we wish to distinguish the setting from the application and planning component to emphasize the fact that one may influence the other (Link AB in the Analytic Model). In large, centralized districts with differentiated staffing patterns, for example, the application process may not include representatives of the primary interest groups with a stake in the Demonstration--i.e., principals, program administrators, teachers, and parents. Similarly, demographic and bureaucratic features may affect planning activities, once districts have been selected.

In summary, the setting provides us with a picture of the broad organizational context in which the Demonstration takes place. The application and planning variable group offers a description of the specific ways in which the Demonstration is conceived and nurtured. The former is seen as relatively inert, the latter as more manipulable. And the former may influence the latter.

4.1 The Setting

4.1.1 Research Objectives

Education and educational change occur in a social setting. The social setting for the Demonstration is of importance, therefore, because it represents a set of contextual variables which may influence directly allocation changes and indirectly other variable groups.

Most research on educational change has focused single innovations and the factors that cause individuals to adopt or reject them.[1] But even an individual educator who is innovative is enmeshed in an organizational context. The structure and other characteristics of educational organizations are often more important for successful implementation of change than the particular blend of personality types within them.[2]

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[1] Rogers, E. and F. Shoemaker. Communication of Innovations. New York: The Free Press, 1971.

[2] Hage, J. and M. Aiken. Social change in complex organizations. New York: Random House, 1970.

The structure of the organizational setting embodies the openness of an organization to change and how organizations change in different ways. These structural variables include complexity, centralization, formalization, and stratification of the organization.[3]

Other characteristics also affect the responsiveness or resistance of an organization to change. These include organizational attitudes that support change, clarity of goal structures, professionalism of staff, and not too many interests in preserving the status quo.[4] We find also that a school is most likely to adapt to those outside pressures least at variance with its previous commitments.[5] Finally, there must be resources available in terms of money, personnel, time, and skill.[6]

Thus, important to the understanding of the process of change in educational organizations is an awareness of the organizational systems and subsystems and the strategies that can be used to cause and support educational change.

The setting for the Demonstration may be described at three levels:

- The State Level - State Educational Agencies (SEAs), through which Title I funds are distributed;
- The School District Level - Local Educational Agencies (LEAs), to which Title I funds are allocated;

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[3] Buckley, W. Sociology and modern systems theory. Englewood Cliffs, N.J.: Prentice-Hall, 1967.

[4] Glaser, E. and H. Ross. Increasing the Utilization of Applied Research Results. Los Angeles: Human Interaction Research Institute, 1971.

[5] Gross, N., M. Giacquinta, and M. Bernstein. Implementing organizational innovations: A Sociological Analysis of Planned Organizational Change. New York: Basic Book, 1971.

[6] Baldridge, J. and T. Deal. Managing Change in Educational Organizations. Berkeley, California: McCutchan Publishing Corporation, 1975.

- The School Level - of which there are three types: those which are recipients of Title I funds all three years of the Demonstration; those which are recipients during the implementation years only; and those which never receive Title I funds.

The setting at each of these three levels provides the context for the Demonstration and may influence allocation policy. All three levels will be examined with the following objectives:

- To describe the bureaucratic characteristics of SEAs and their mechanisms for regulating Title I;
- To describe the demographic, bureaucratic, and political characteristics of the Demonstration school districts, and their mechanisms for administering Title I;
- To describe the physical and other characteristics of the schools within the Demonstration school districts;
- To determine the degree to which the settings of the Title I Demonstration programs are representative of other Title I school districts;
- To determine the degree to which the settings of the Demonstration programs vary; and
- To determine the degree to which the characteristics of the settings influence allocation policy.

4.1.2 Data Sources and Variables

Data will be collected pertaining to each of the three levels from a variety of relevant data sources. These data sources are summarized in Figure 4-1. Each of the levels of the setting and their variables of interest are described below:

The State Level

State Educational Agencies are of interest to this study because they are the agencies through which the Title I funds are allocated. As such they are the primary regulatory

FIGURE 4-1

DATA SOURCE BY LEVEL

Data Source

	Informal SEA Interviews	Informal LEA District Questionnaires	Principal Questionnaires	U.S. Census Fourth Count Data	ESEA Title I Comparability Report	Project Files*
State	X	X				X
District		X	X	X	X	X
School			X		X	X

---

*This data source is not detailed or further explained in the analytic plan, but will be a valuable source of information and will be used when and where appropriate.

agencies of the Title I projects. The SEA variables of interest include:

- complexity
  - number of Title I staff
  - duties and responsibilities of Title I staff
- degree of centralization of Title I decision-making
- degree of formalization of Title I regulations or guidelines which govern District Title I activities
- mechanisms for evaluating Title I programs
- degree of supervision of Title I programs within LEAs

There are two primary data sources for the state level:

- informal face-to-face interviews with SEA staff
- informal face-to-face interviews with LEA staff

The District Level

The school district is the level at which the Title I programs are administered. The bureaucratic, demographic and political characteristics of the school district organizations are seen as independent and mediating variables influencing allocation changes and program delivery.

The LEA organizational and political variables of interest include:

- complexity
  - number of Title I staff
  - duties and responsibilities of Title I staff
- degree of formalization - existence of policies outlining rules and regulations of Title I activities
- degree of centralization of district Title I decision-making
- degree of public controversy over school related issues

The data sources for the above variables are:

- informal interviews with LEA staff
- principal questionnaires

Additional demographic characteristics of the school districts will be derived from U.S. fourth count Census data. These demographic variables include:

- mobility, including birthplace, length of residence, and region of residence
- ethnic composition, including native language and parentage indicators
- family structure, including parent presence and sibling structure indicators
- educational attainment, including indicators of public vs. private school populations, and years of schooling completed
- economic structure, including age of labor force, unemployment, income source indicators, and occupational profile data
- poverty, including the percent and nature of community families below the poverty level
- income structures, consisting of indicators of the dollar income of community members
- general demographic, including sex, total population and housing count data

The School Level

The third level of our description of the setting for the demonstration is the schools themselves. Variables of interest here are the following:

- physical characteristics and facilities
  - age of building
  - total number of classrooms
  - number of classrooms utilized for instructional purposes
  - number of open classrooms and number of students enrolled
  - existence of various facilities (e.g., gym, cafeteria, athletic field, etc.)
  - existence of library and number of volumes contained

- grade span and enrollment by grade
- classroom assignment procedures in regular instructional programs
- principal characteristics
  - educational attainment
  - professional experience
- staff in full-time equivalents
- staff-pupil ratio
- characteristics of student population
  - ethnicity
  - SES

4.1.3 Analytic Methods

At the state and district levels, where the number of cases is less than or equal to 16, analytic techniques will be primarily descriptive, although simple comparative analyses will also be employed. Means and standard deviations will be compiled for all continuous variables, and frequency distributions for categorical variables. For categorical variables, such as SEA complexity and formalization, contingency tables will be developed. For ordinal or continuous variables, such as size and degree of centralization decision-making, Rank Order Grids will be utilized.[8]

At the school level, additional statistical techniques will be employed to compare types of schools. Two factors will be involved in these analyses: district (levels ≤ 16) and school types (levels = 2 or 3). For all districts, two school types will be analyzed: Title I during the current year, and Title I during the implementation years only. For a subset district having a third school type -- never Title I -- another set of analyses will be performed.

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[8] A Rank Order Grid is a matrix in which one graphically displays one rank order variable against another. In this study, the matrix would be 16 x 16, in order to plot each of the Demonstration districts.

The analysis strategies chosen for comparing contextual characteristics at the school level depend on the nature of the response scale of the variable being analyzed. Chi-square analyses will be used with categorical variables, and some form of analysis of variance will be used with continuous, ordered, or dichotomous variables.

4.2 The Application and Planning Process

4.2.1 Research Objectives

The second aspect of the context of the Demonstration under consideration in this study is the application and planning period. Whereas the setting considers the static, relatively fixed dimensions of the context, this section covers the more dynamic aspects of context, the application and planning *process*. Certain organizations have more built in capacities for assessing needs and planning viable alternatives than others and the process by which they undertake these activities also varies. A major purpose in examining the planning process is to identify the manipulable variables, which promote change.

Many students of the planning process emphasize the importance of paticipation in planning by various affected actor groups.[7] An underlying assumption of many researchers is that if those who are affected by the decisions are involved in decision-making, they will be more willing to adjust to changes, thus reducing an important source of possible resistance.[8] Another frequently made assumption is that broad participation of affected actor groups increases the likelihood that changes undertaken will be relevant to important organizational needs.[9] (It may be pointed out, however, that evidence to test these assumptions is not widespread.[10])

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[7] Zaltman, G. et al. *Innovations and organizations*. New York: John Wiley & Sons, 1973.

[8] Gaynor, A.K. The study of change in educational organizations: A review of the literature. Paper presented at UCEA, Ohio State University Career Development Seminar. Columbus, Ohio, May 1975.

[9] Shepard, H. Innovating-resisting and innovation producing organizations. Journal of Business *40*, 1967, pp. 470-477.

[10] Gross, N., M. Giacquinta, and M. Bernstein. *Implementing organizational innovations: A Sociological Analysis of Planned Organizational Change*. New York: Basic Book, 1971.

Opinion is currently divided as to the efficiency of two different approaches to decision making: authority decisions and collective decisions. Authority decisions are those made by an individual or "dominant coalition"[11]. Collective decisions are made by all or a majority of the organizational members. Each approach to decision-making has some inherent difficulties. Authority decisions can lead to resistance from those who feel disenfranchised; it may also lead to decisions which are perceived as incongruent with organizational needs. Collectively made decisions may result in resentment from members whose viewpoint is not accepted.

In studying the school districts in the Title I Demonstration program, these factors and their relevance to allocation changes and program delivery will be explored. The objectives of this part of the research are:

- to describe the history of the application process,
- to describe the activities of the first year planning process,
- to identify the participants of the planning process,
- to draw inferences about problems associated with planning,
- to identify the process variables associated with alternative allocation policies,
- to identify factors associated with changes in allocation policy,
- to identify factors associated with changes in program delivery,
- to identify the factors of planning that can be useful in developing guidelines and recommendations for districts seeking to replicate the Demonstrations, and
- to describe and analyze the selection process and draw inferences from the process about representativeness of the Demonstration projects.

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[11] Thompson, J. Organizations in action. New York: McGraw-Hill Book Co., 1967.

In order to achieve these objectives, the application and planning processes will be examined separately.

4.2.2 Data Sources and Variables

Data on the application and planning process will be gathered from a variety of data sources at the state, school district, and school levels. These include:

- informal face to face interviews with SEA Title I officer,
- informal face to face interviews with the LEA administrative personnel,
- principle questionnaires to all principals in the Demonstration Districts,
- observation of program activities by AAI personnel, and
- review of district and school records on and off site.

The Application Process

The application process involved both state and local participation. Each will be discussed. At the state level, several aspects of the initial application period will be considered, including the way in which SEAs first learned of the Demonstration, the manner in which they first communicated with local school districts, and subsequent interactions. Of specific interest are:

- the criteria used by the SEAs in selecting districts to be notified of the Demonstration,
- the criteria by which the SEAs determined which of the school district applications they received would be forwarded to NIE,
- any modifications made by SEAs prior to forwarding the proposals to NIE,
- the amount of time spent by SEA staff with LEAs in activities related to their application and selection as potential Demonstration districts, and
- the time interval which passed between SEA's first awareness of the Demonstration project (receipt of the RFP) and its forwarding of applications to NIE.

At the district level, the involvement of the LEAs in the application process will be described from the following perspectives:

- the way in which the districts initially learned of the Demonstration project,
- the reasons which prompted the districts to apply,
- the participants in district level meetings held to consider the application,
- the nature of the district level meetings held to consider the application, including the number of meetings held and the substance of the meetings held, and
- identification of key decision makers in the application process.

Throughout a discussion of the application process, it must be noted that the selection process was not a systematic one. The selection process conducted by the states, the self-selection of school districts, and the ultimate selection of participant districts by NIE were all non-random. This constrains the generalizability of findings from the study to the larger population of Title I school districts. It is our intention to explore this selection process and to examine the relationship between the various selection mechanisms and the allocation policy and program delivery.

The Planning Process

Sixteen districts were ultimately selected for participation in the Demonstration. The planning process is of particular interest as it includes manipulable factors in organizational change. As such, it provides the context from which inferences can be drawn to provide guidelines for replicability of the Demonstration.

Documentation of the planning process will include discussion of the following variables:

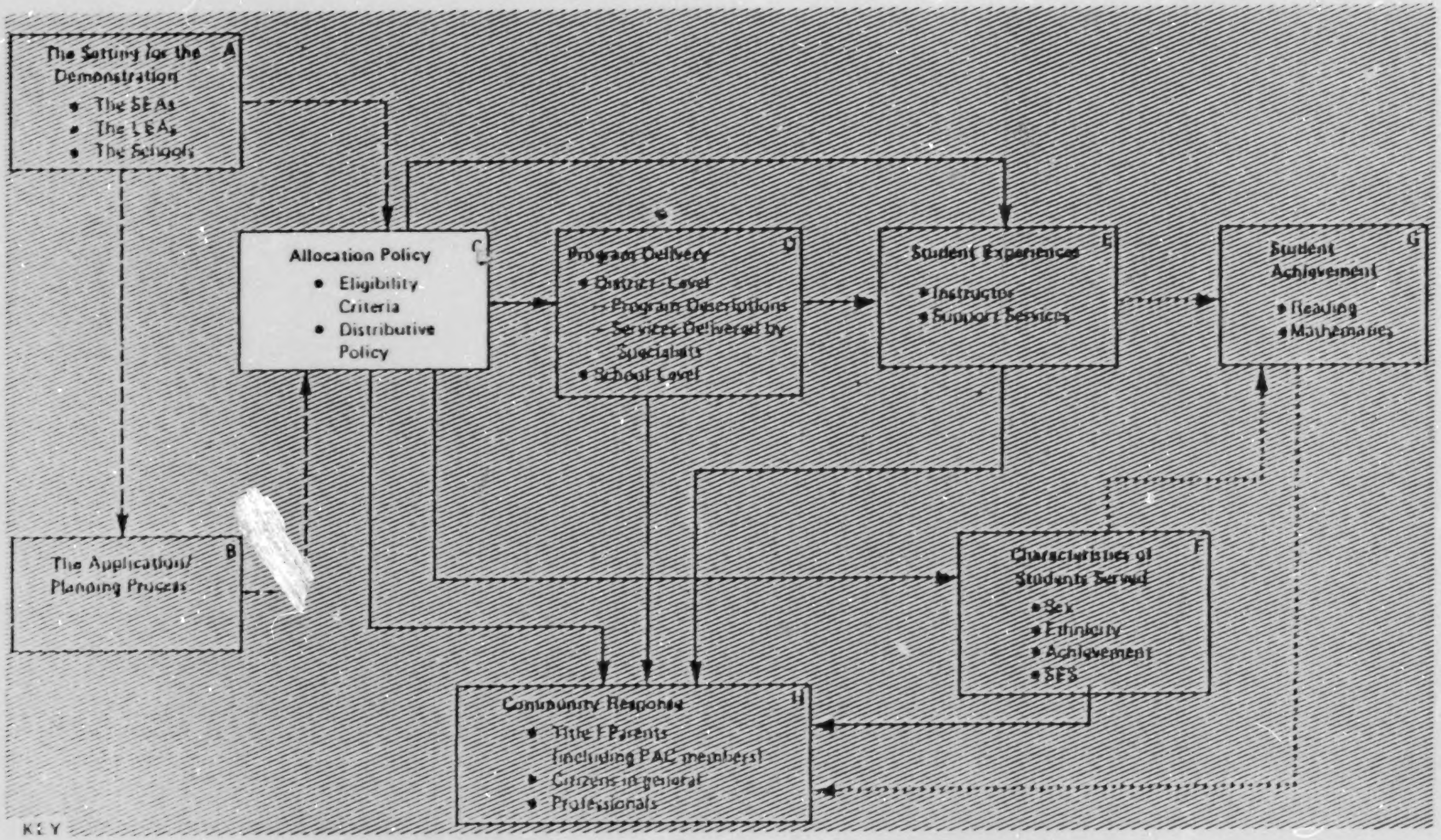
- extent of involvement of SEA staff in providing technical assistance and opinions on policy options,
- participants involved in planning meetings, such as central office administrators, principals, teachers, parents, and students,
- nature of planning meetings, including number of meetings held and the substance of the meetings held,
- identification of key decision-makers in the planning process, and
- time involved in the planning process.

4.2.3 Analytic Techniques

Documentation of the application and planning process provides the opportunity to explain the effects of the selection and planning on the allocation changes and program delivery. In identifying manipulable variables associated with allocation policy and program delivery, other districts can be guided in their planning efforts. Data will be analyzed using case study methods. In addition, simple frequency distributions and crosstabs may be presented for variables of interest, e.g., number of planning meetings attended by type of participant. Finally, districts will be classified on such variables as "authority" vs. "collective" application/planning processes. We will then explore the relationship between these variables and changes in allocation policy and/or other study outcomes.

Chapter 5

ALLOCATION POLICY


The Setting for the Demonstration
A
• The SEAs
• The LEAs
• The Schools
Allocation Policy
C
• Eligibility Criteria
• Distributive Policy
Program Delivery
D
• District Level
– Program Descriptions
– Services Delivered by Specialists
• School Level
Student Experiences
E
• Instructor
• Support Services
Student Achievement
G
• Reading
• Mathematics
The Application/Planning Process
B
Characteristics of Students Served
F
• Sex
• Ethnicity
• Achievement
• SES
Community Response
H
• Title I Parents (including PAC members)
• Citizens in general
• Professionals

KEY

– – – – – Links to be analyzed conceptually

———— Links to be analyzed statistically for full range of districts

. . . . Links to be analyzed statistically, where possible, for a subset of districts

5.0 ALLOCATION POLICY

5.1 Dimensions of Allocation Policy

The fundamental independent variable in our analysis is district allocation policy. For each year we are concerned with the policy for that year. We are, of course, also concerned with changes in policy. The allocation policy is fundamental because it is the starting point for any of the other change processes which might take place in the districts and because it is that aspect of the Demonstration which is most likely to be the subject of legislation and federal policy.

There are two dimensions of allocation policy as we have conceptualized it. First, there is policy with regard to the determination of eligibility. Second, there is policy with regard to the distribution of resources -- what we have referred to as "distributive policy."

As we have noted in previous chapters, all of the sixteen districts in the Demonstration are planning to adopt standardized achievement test scores to determine the eligibility of schools and students for Title I compensatory services. However, the initiation of this policy is certainly not unvarying. There are four aspects of eligibility policy which are likely to vary from district to district. (Since we do not know at this time what the districts are going to propose for implementation, we shall treat these options abstractly for the purposes of this analytic plan.) They are the following:

1) Districts will vary in their application of a "hold harmless" provision both at the school level and at the student level. That is, even if currently served schools or students do not meet new eligibility criteria, certain districts may choose to continue to serve them in order not to harm them.

2) Regardless of "hold harmless" policy decisions, the actual degree of overlap between students and schools selected using achievement criteria and poverty criteria will vary from district to district, as a function of both the individual and ecological[1] correlations between poverty and achievement within districts.

3) The specific eligibility criteria applied will vary from district to district: achievement tests will vary, formulas will vary, and cut-off levels will vary, among other things.

4) The degree to which districts depart from current practices with regard to the selection of students will vary from district to district. For example, a district which currently uses standardized achievement test scores will not be departing as far from current practices as a district which currently allows teacher discretion in the selection of students.

Thus, even though the general statement that the districts are uniform in the substitution of achievement criteria for poverty criteria is true, there is considerable variation within that truth. Our analysis will be aimed at categorizing such variations and developing policy relevant typologies to describe it. We will be limited to categorical and ordinal variables for this analysis.

We are not able to specify at this time any useful methods to measure these characteristics of the Demonstration districts' implementation proposals. We must await the districts' implementation proposals. Districts are also fairly uniform in their tentative plans for distributive policies. Most of them plan to initiate distributive policies which aim at reaching more schools and more students, although there are exceptions. It is not clear, however, what the net effect of the combinations of distributive policies at the school and student level will be. Table 5-1, which was first introduced in Chapter 2, Section 3, outlines the logically possible policy and implementation alternatives, given what we currently know about district plans.

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[1] Ecological correlations are correlations at aggregate levels such as precincts, communities, or regions.

TABLE 5-1

LOGICALLY POSSIBLE DISTRIBUTIVE POLICIES DURING THE IMPLEMENTATION OF TITLE I COMPENSATORY EDUCATION DEMONSTRATIONS*

Services Distributed to an Increased Number:		Services Distributed to an Increased Number of Students Across Schools	
Of Schools	Of Students Within Schools	No	Yes
YES	YES	(1)	(2)
	NO	(3)	(4)
NO	YES	(5)	(6)
	NO	(7)	(8)

---

* Cells (1) and (8) are crossed out because they are not logically possible

The conceptualization outlined in Table 5-1 is a simple, and probably realistic, approximation of what the districts are likely to initiate. This simple conceptualization can be elaborated by extending the logical possibilities within cells either by ranking or scoring the amount of increase in schools and/or in students within schools. It could also be elaborated by estimating actual numbers or ratios of increases within cells. One approach to the latter elaboration was presented in Chapter 2, Section 3. The graph is repeated here as Figure 5-1.

Figure 5-1 presents the proportion of each of the types of schools in each of the districts: those schools currently receiving Title I services (Type I), not currently receiving Title I services but expected to receive them under implementation (Type II), and never receiving Title I services during the Demonstration (Type III).[2] As pointed out in Section 2.3, measuring change in this manner provides an estimate of the scale of impact as related to demographic characteristics of the districts, and permits either categorical/typological or continuous variable treatment of the policy variable. To treat policy options as categorical variables, we would identify clusters in the three dimensional space and describe these. To treat policy options as continuous variables, we would approach the analysis uni-dimensionally and multi-dimensionally. A uni-dimensional approach would simply examine the relationship between the proportion of schools currently in Title I (Proportion Type I) and other characteristics or outcomes of the Demonstration.[3] One multi-dimensional approach would involve

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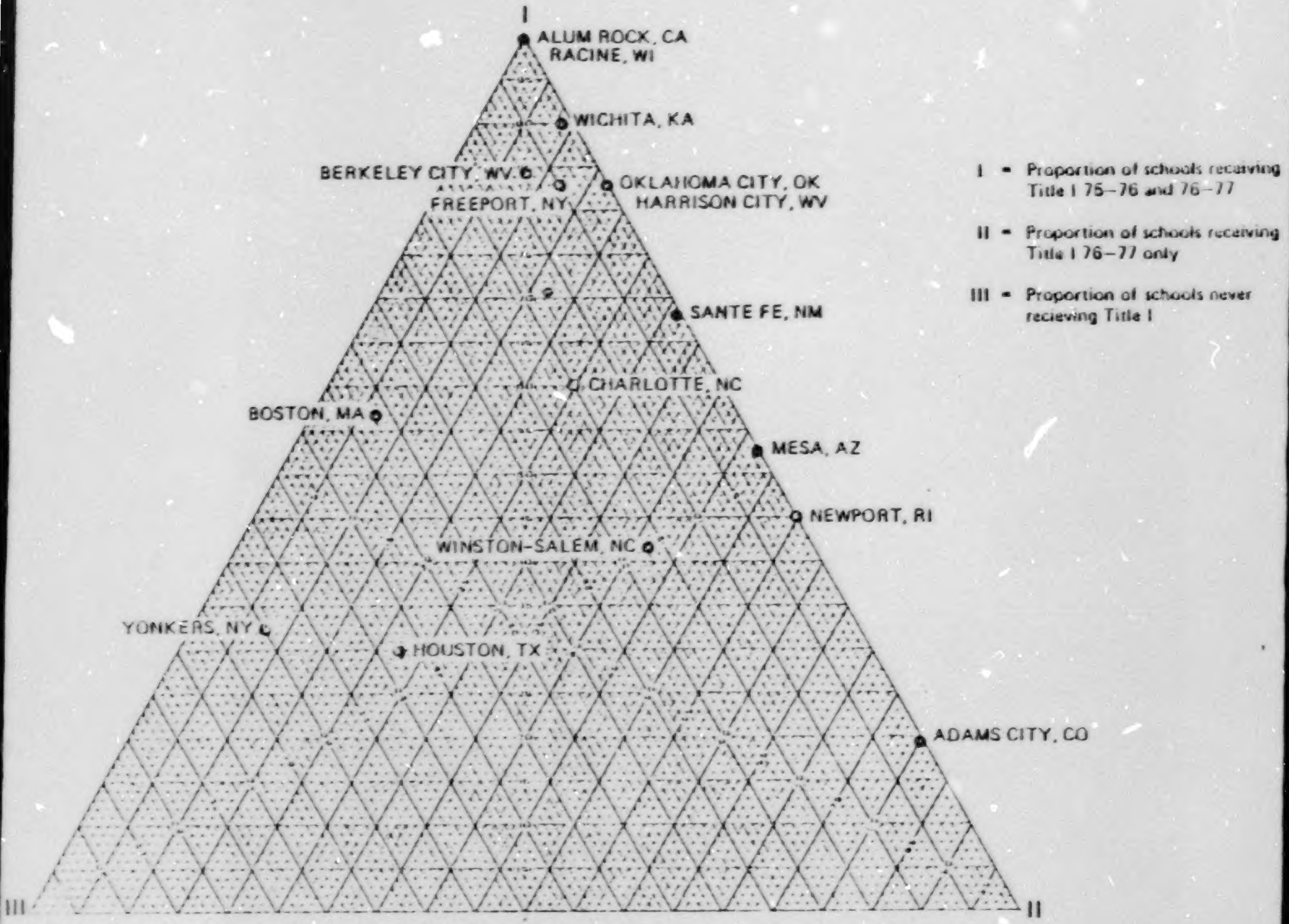
[2] These estimates are based primarily on the planning year proposals of the districts updated from subsequently gathered information.

[3] In the remainder of this chapter we refer to correlations of allocation policy characteristics with other characteristics and outcomes. The reader can refer to Chapters 3, 10 and 11 for a systematic discussion of the analytic model or to Chapters 4 through 9 for detailed discussions of variable groups.

FIGURE 5-1

GRAPHIC PRESENTATION OF DISTRIBUTIVE POLICY OPTIONS



constructing a variable representing the ratio of the proportion of new schools added under implementation to the proportion of all schools not currently served by Title I. (Proportion Type II/Proportion Type II and Type III). We would thus be measuring impact of the Demonstration as a ratio of proportions: actual impact to possible impact. A second multidimensional approach would be to compute the ratio of the new schools added under implementation to the proportion of schools currently served (Proportion Type II/Proportion Type I). We would thus be measuring degree of departure from current program efforts. We would expect each of these variables to be correlated with other characteristics and outcomes of the Demonstration in very different ways. However, it is also true that these two variables should, by definition, be positively correlated with each other. If the positive correlation is very high,[4] then they would just be measuring the same thing. Since the correlation is only moderate, (Q = .47), we want to devise an analytic method (or methods) which permits us to determine whether or not these two aspects are correlated with other aspects of the Demonstration independently, or jointly, or in some interactive fashion.

Table 5-2 presents a cross-tabulation of the two ratios of schools added under implementation. Each variable is dichotomized at the median. This classification is arbitrary. One might also examine these interrelationships along a scale instead of categorically. The cell entries are the names of

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[4] The variables are constructed from three proportions which add to 100%. There are thus two degrees of freedom--knowing any combination of two proportions determines the third. Since the Proportion Type II is the numerator in both variables, the denominator of at least one of the two variables must be lower. Assuming that the two variables in the denominator are not strongly and negatively correlated with each other, both denominators are likely to be lower. Thus, the two ratios of proportions are likely to be positively correlated with each other. The actual correlation is not very informative since so many districts have zero schools of Type III.

TABLE 5-2

ALTERNATIVE RATIOS OF SCHOOLS ADDED UNDER IMPLEMENTATION

	TYPE II/(TYPE II + TYPE III)		
Type II/Type I	Low <72%	High ≥72%	Total
HIGH ≥42%	Charlotte Houston Racine (A)	Mesa Adams County Winston-Salem Santa Fe Newport (B)	8
LOW ≤20%*	Alum Rock Boston Freeport Yonkers Berkeley County (C)	Wichita Oklahoma City Harrison County (D)	8
TOTAL	8	8	16

$Q = .47$

Type I: Schools curently receiving Title I

Type II: Schools receiving Title I during implementation years

Type III: Schools never receiving Title I services

*None of the Demonstration districts has a ratio of Type II to Type I schools that is greater than 20% and less than 42%.

districts, so that the reader can relate this conceptual aspect of the analysis to other information about the districts. The correlation above is apparent in Table 5-3. What, then, are the analytic implications?

First, this table organizes the districts into categories with different policy implications. Cell B includes those districts with the most extensive redistributive plans. We can learn most about the effects of redistribution of educational services from these districts. Cells A and B include districts in which we can learn about particular aspects of redistribution. Cell C is a cell which is interesting because it denotes either the districts that redistribute educational services within schools or alter the content or the strategy of educational services.

The second general use of this table is for the comparison of the effects of different distributive policies and practices. A comparison of Cell (C) with Cell (B) provides an estimate of the joint effects of these two variables. Cell (B) includes districts which extend Title I distribution of services both as a large departure from current program efforts and as a significant proportion of possible schools. Cell (C) includes districts which do neither. Thus, we see the differences between doing both and doing neither.

A comparison of Cell (C) with Cell (D) provides an estimate of the independent effect of extending Title I coverage to a large proportion of possible schools, without simultaneously extending Title I coverage greatly from current program efforts. A comparison of Cell (A) with Cell (C) provides an estimate of the effects of extending Title I coverage greatly from current program efforts, without simultaneously extending coverage to a large proportion of possible schools.

A comparison of Cell (A) with Cell (D) provides an estimation of the *relative* effects of extending Title I coverage either to large proportions of possible schools or greatly beyond current program efforts. For example, if the average income level of new students served under implementation in Cell (A) is higher than the average income level of new students served in Cell (D), then we would conclude that extending Title I coverage beyond current program efforts alters the income level of students served more than does extending coverage to a greater proportion of schools served.

5.2 Research Objectives and Analytic Procedures

The above discussion has outlined some approaches to the conceptualization and measurement of allocation policies, relative to eligibility and distribution of services. In order to summarize our approach, we need first to define the different objectives and the levels at which we shall conduct analyses, and then to illustrate the techniques that will be used within each of these.

The analysis of allocation policies has two objectives. First, we need to describe and document the nature of the intended allocation policies and their implementation. Such description and documentation must include implementation, since describing policy statements alone, and not their actual results, would not be useful. Since we do not expect a perfect correlation between stated policy and implementation, however, and since we need to understand the impact of policy, we cannot merely study implementation. Second, we need to analyze the effects of allocation policy on other outcomes of the Demonstrations.

The analytic objectives help us to distinguish between documenting the actual implementation of policy and analyzing causal links. In the former case, we are obtaining independent estimates of the reality of policy. In the latter case, we are examining the impact of policy which we have already documented. Referring to the analytic model, the implementation analyses are part of the documentation of allocation policy (Group C). The effects on other outcomes are represented by the various linkages in the model (CD, CE, etc.) The analyses are sequential. First, we analyze the relationship between policy and implementation. Subsequently, we analyze the relationships going from policy to implementation to effects.

There are three levels at which each of the above analytic objectives will be studied: the district level, the school level, and the student level. Table 5-3 summarizes the analytic objectives, the levels of analysis, and the analytic procedures for the study of allocation policy: distributive policy and eligibility criteria. Several different types of analyses will be conducted. In each of them, stated allocation policy will be measured in terms of the public record at the district level. In each, the level of analysis determines the number of cases available for studying implementation and changes associated with district policies. Analyses will be done within districts and across districts, and thus the relevant number of cases will vary.

Within districts, analyses will be simply descriptive. Marginal distributions, proportions, measures of central tendency, and measures of dispersion will be reported. Across districts, allocation policy will be analyzed by means of categorizations, typologies, and continuous measurements, as described earlier in this chapter. Then, comparisons will be made among implementation results and the effects of allocation policy on other characteristics of the Demonstration districts.

Across districts, the statistical techniques to be employed in the comparative analyses are unusual in some respects. They are not unprecedented, however. The study requires comparative analyses done on a small number of cases with a) policy measurements on the same number of cases and b) other inter-

TABLE 5-3

ANALYTIC TECHNIQUES FOR THE STUDY OF DEMONSTRATION ALLOCATION BY ANALYTIC OBJECTIVE AND ANALYTIC LEVEL

		Demonstration Allocation Policy*	
Analytic Objective	Analytic Level	Distributive Policy	Eligibility Criteria
Measurement of Implementation	School District	Contingency Tables Rank Order Grids	Contingency Tables Rank Order Grids
	Schools	Anal. of Variance Regression Analysis Path Models	Anal. of Variance Regression Analysis Path Models
	Students	Anal. of Variance Regression Analysis Path Models	Anal. of Variance Regression Analysis Path Models
Analysis of Efforts on Other Characteristics and Outcomes	School District	Contingency Tables Rank Order Grids	Contingency Tables Rank Order Grids
	Schools	Anal. of Variance Regression Analysis Path Models	Anal. of Variance Regression Analysis Path Models
	Students	Anal. of Variance Regression Analysis Path Models	Anal. of Variance Regression Analysis Path Models

*Both columns in this table show exactly the same analytic techniques. We have retained both columns because adjustments can be expected in each column separately, based on usable data.

vening and dependent variable measurements on a relatively large number of units within these comparative cases. The most frequent precedents for such analyses are in the area of urban public policy.[5]

Varying approaches have been used by the researchers cited in footnote five. However, for the purposes of this plan, we can best present the alternatives as two generic types.

The first generic type can be described as simple comparative, and involves contingency tables similar to Table 5-2 plus rank ordering grids.[6] This type is objective and quantitative, without being statistical in the sense of providing probability estimates and confidence intervals for suggested findings. It is appropriate particularly for analyses of district level data, but can also be used for school and student data aggregated to the district level.

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[5] Howard Schuman and Barry Gruenberg, "The Impact of City on Racial Attitudes", American Journal of Sociology, Vol. 76. 1976.

Peter H. Rossi, Richard A. Berk, Bettye K. Edison, The Roots of Urban Discontent. New York: John Wiley & Sons, 1974.

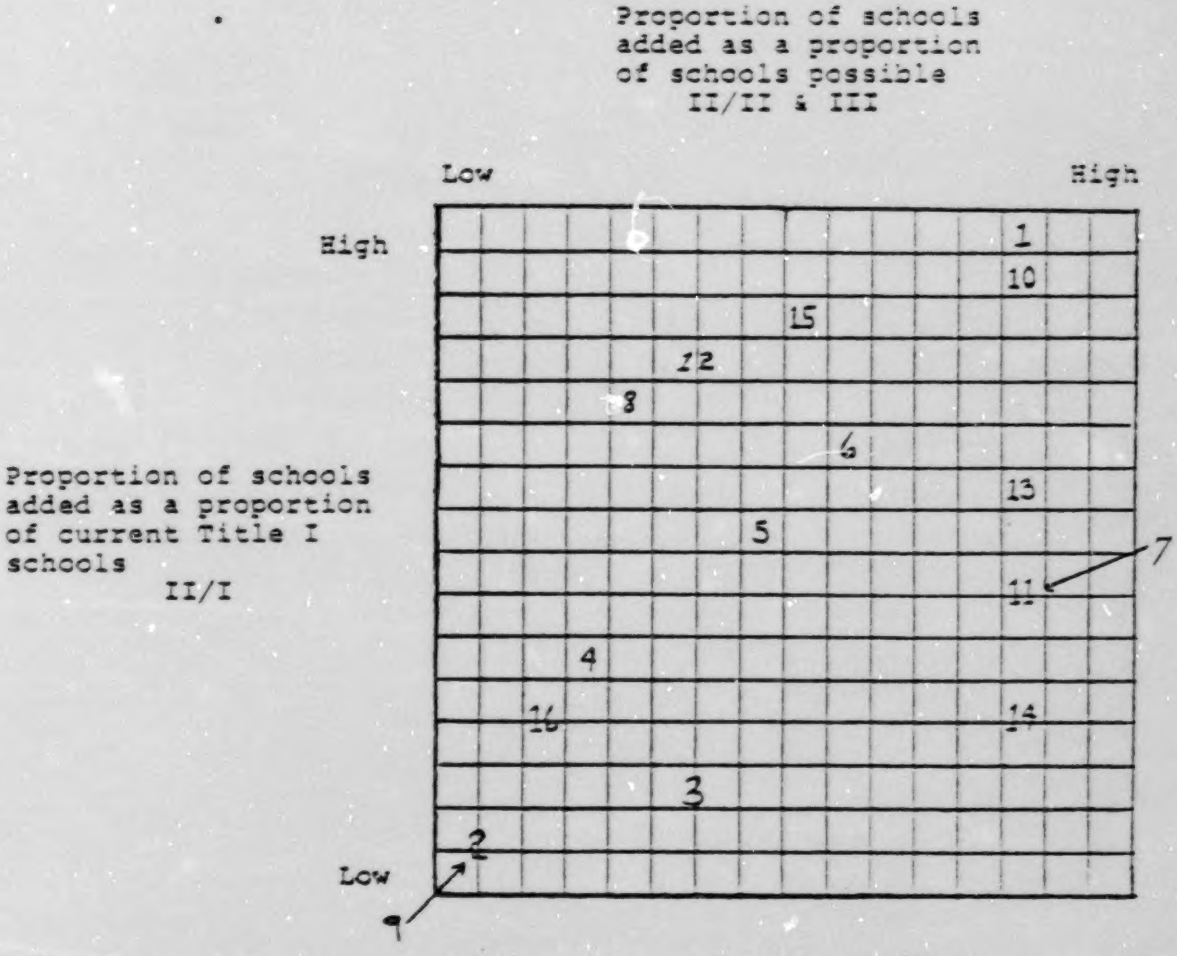
Robert L. Crain, Morton Inger, Gerald A. McWorter, James J. Vanecko. The Politics of School Desegregation. Chicago: Aldine Press, 1968.

James J. Vanecko and Jennie Kronenfeld. "Preferences for Public Expenditures and Ethno-Racial Group Membership: A Test of the Theory of Political Ethos." Forthcoming Ethnicity.

Chapter 6, "Community Reaction to School Desegregation", by James J. Vanecko, Robert L. Crain, et.al., Design for a National Longitudinal Study of School Desegregation. Santa Monica, California: The Rand Corporation, 1974.

[6] Rank ordering grids are matrices on which two rank order variables may be displayed. For example, the same data as presented in Table 5-5 is given in the 16 x 16 rank ordering grid below. Its advantage is that it presents more information than the categorical contingency table. (The entries may or may not be identified by district, depending on the confidential nature of the variables.)

TABLE 5-4
SAMPLE RANK ORDER GRID



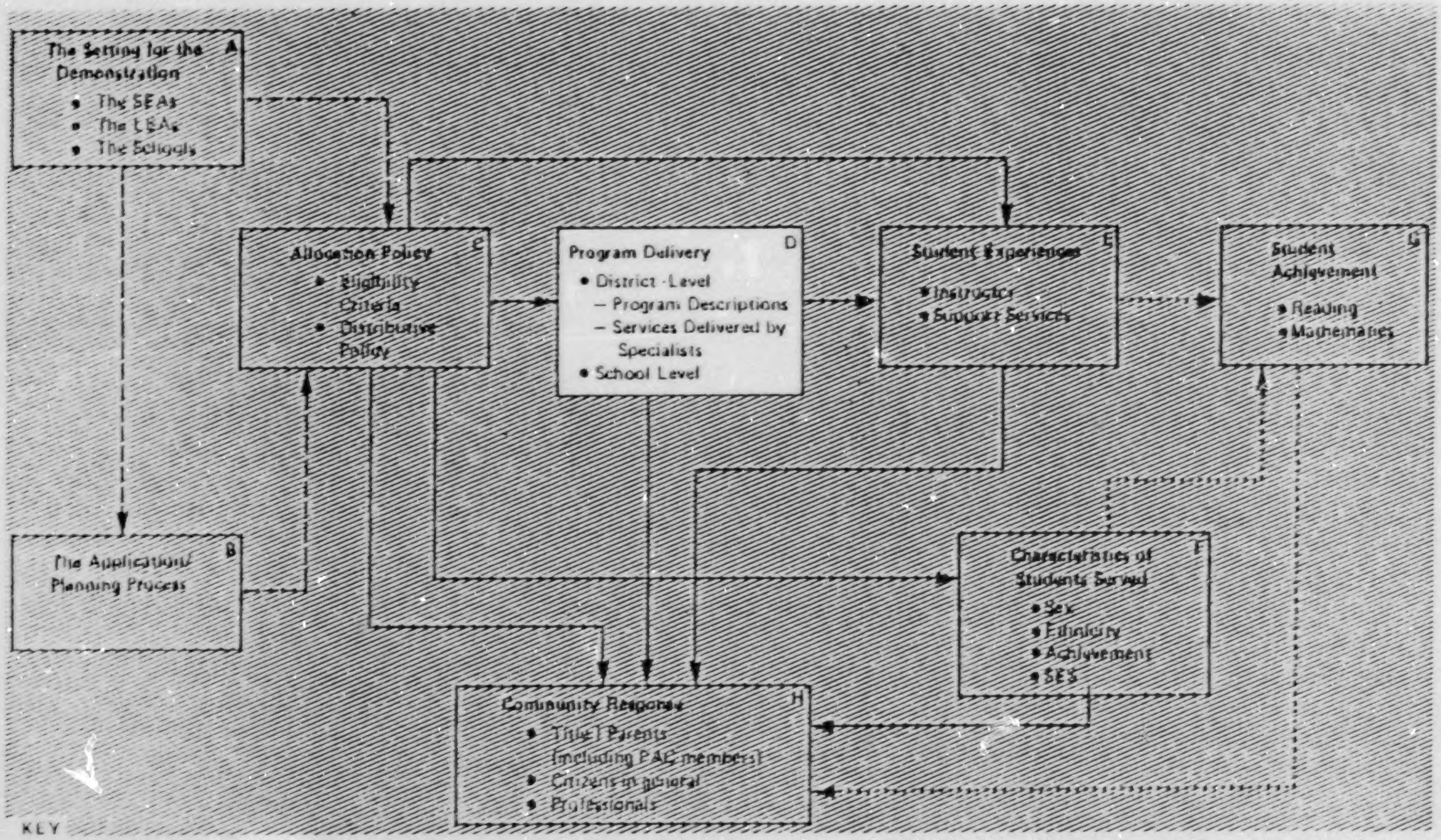
Key to School District Identification Numbers:

1=Adams County, 2=Alum Rock, 3=Berkeley County, 4=Boston, 5=Charlotte, 6=Freeport, 7=Harrison County, 8=Houston, 9=Mesa, 10=Newport, 11=Oklahoma City, 12=Racine, 13=Santa Fe, 14=Wichita, 15=Winston-Salem, 16=Yonkers

The comparative type of analysis is particularly advantageous for exploratory analyses both related to the nature of allocation policies and to their effects on other characteristics of the Demonstration districts. It aids the analyst as well as the reader in examining identified districts within a contingency table. It also helps generate alternative hypotheses or inferences about the operation of processes. Both can then be tested or at least analyzed.

Subsequent to use of the first approach, a second generic approach will be employed in order to study the effects of district level allocation variables on schools, students and parents: least squares statistical models. Analysis of variance techniques can be used, provided districts are logically grouped in such a manner that the assumptions of this method are met. Another, probably more useful method for testing our analytic model, is general regression or path analysis. Taking this approach, categorical variables can be introduced as dummy variables and continuous variables can be introduced as such, if the results are cautiously interpreted.

Chapter 6
PROGRAM DELIVERY


The Setting for the Demonstration A
• The SEAs
• The LEAs
• The Schools
The Application/ Planning Process B
Allocation Policy C
• Eligibility Criteria
• Distributive Policy
Program Delivery D
• District -Level
– Program Descriptions
– Services Delivered by Specialists
• School Level
Student Experiences E
• Instruction
• Support Services
Characteristics of Students Served F
• Sex
• Ethnicity
• Achievement
• SES
Student Achievement G
• Reading
• Mathematics
Community Response H
• Title I Parents (including PAC members)
• Citizens in general
• Professionals

KEY

- - - - - - Links to be analyzed conceptually

———— Links to be analyzed statistically for full range of districts

· · · · · · · · · Links to be analyzed statistically, where possible, for a subset of districts

6.0 PROGRAM DELIVERY

One probable outcome of Title I reallocation is a change in Title I program delivery: in the goals, content, organization, or staff of a program. This relationship is shown in the Analytic Model as link CD. It is likely that if the reallocation results in an increased number of Title I schools and/or students, changes in the Title I program will be made to accommodate this increased coverage. In order to guarantee that program changes resulting from the reallocation are identified, it is important to describe the Title I programs in each district in detail and from a number of perspectives.

It is also important to describe the other compensatory programs which operate in each district. Title I does not exist in isolation, but is usually part of a larger system of compensatory education. Change in one part of the system may affect the other parts. A change in Title I may lead to similar changes in other programs, insofar as the programs are centrally coordinated. A change in Title I may lead to contrasting changes--a decrease in some aspect of Title I may lead to a corresponding increase in another program, particularly if the total program funding remains constant. The research question to which this chapter is directed, then, is: "How do Title I and other compensatory programs change as a result of the Title I reallocation?"

In answering this question, all other compensatory programs will not be treated equally. Close attention will be paid to state-funded compensatory programs, since these generally provide non-categorical aid, share the same goals and target groups as Title I, and are most likely to be affected by Title I allocation changes. Only an overview will be given of other compensatory programs. Similarly, an overview will be presented of all types of compensatory activities, but only language arts and mathematics instruction will be described in depth. Three different approaches will be used, each of which gives a different perspective on program delivery.

The first approach will be to describe programs from the perspective of program administrators. The emphasis here will be on compiling a comprehensive picture of program organization, goals, and delivery patterns for each district separately and for districts as a whole. Although this approach will detail each district's unique program structure in order to establish a baseline for the examination of change, the major focus will be on cross-district comparisons and the identification of common patterns of program delivery.

The second approach will be to obtain a description of the compensatory instruction delivered to students from one group of persons who actually provide that instruction, instructional specialists. There are several reasons for augmenting the description of program delivery obtained from program administrators with one provided by program deliverers. First, there is often a gap between programs as they are planned and programs as they are implemented. The program described by the designer may be very different from the one described by the implementer. Second, even when design and implementation are closely matched, program implementers can often provide a more detailed picture of program content and instructional strategies than is usually obtainable at a higher level. Finally, obtaining information from program deliverers allows us to estimate variability within a program.

The third approach will be to use the school as a unit for describing compensatory programs. This approach is useful both in identifying variation from school to school within a program and in providing an overview of the range of compensatory services a single school might offer. In the remainder of this chapter each of these approaches is discussed in detail.

6.1 Program Descriptions

The goal of the program description approach is to provide a comprehensive and detailed picture of the compensatory programs in each district in the Demonstration. Such descriptions are important as a baseline for identifying changes which may result from the Title I reallocation and for furthering our understanding of district similarities. This will facilitate development of cross-district classification schemes. Unlike the other two approaches to describing program delivery, this approach attempts to present the objectives and educational strategies of each district's compensatory programs in the district's own terms rather than in the terms of a standard set of categories imposed by the researchers.

Data for this approach will not be gathered with standardized questionnaires or highly structured interviews, but will be obtained from a variety of sources which vary from district to district. Since the districts have already published a great deal of information on their programs, the program descriptions effort will begin with an examination of the documents currently on file and gathered during the late spring and early summer of 1976. During the fall, each Abt District Research Coordinator (DRC) will be asked to verify this information and to obtain any missing information from the appropriate program administrative staff in his or her district.

The resulting descriptions will be primarily qualitative, and narrative. Descriptive statistics, such as measures of central tendency and dispersion will be provided for variables of interest, but tests of statistical significance will not be employed. Graphic presentations will be used as appropriate.

6.1.1 Within-District Program Descriptions

First we will provide a description of each district's program organization during the planning year (1975-76). Title I programs, other federally funded compensatory programs, state and local compensatory programs, and a discussion of the extent of overlap among the different compensatory education programs in terms of schools served will also be discussed.

6.1.1.1 Program Organization

An organizational chart of each district's compensatory education programs will be included as a means of giving the reader a graphic understanding of the various funding sources operating within each district. The organizational chart will identify the number of district program units and the person(s) responsible for each by funding source, grade level, and program component. A program component is that set of activities and services which districts identify as a unique subset of their overall program. A program unit is the least common element within a program component which can be identified as having a distinct staffing patter, framework, or goal. The organizational chart will summarize the number of schools, centers, and/or homes served by each program unit.

Figure 6-1 presents an example of an organizational chart, showing the organizational structure of the compensatory education programs in one of the Demonstration districts. As shown here, both federally and state-funded programs are present in this district. The federally funded programs are the following:

Title I ESEA, with three program components: Pre-school, Kindergarten Follow Upward (KFU) and Reading/Language Arts (R/LA);

Title VII, with three components: Reading, Mathematics, and Enrichment; and

Title I CESA - Migrant Education.

The "Special Education Needs" Program (SEN) is the sole state-funded program.

The organization chart allows us to identify variability in program structure within and across districts. As indicated in Figure 6-1, some programs are designed with only one grade span in mind, e.g., Preschool. Others vary by grade, e.g., Reading/Language Arts. Some programs have single directors (Title IV) while others do not (Title I). Certain programs such as Preschool are relatively homogeneous and are therefore designated single program units. Others are heterogeneous. The Kindergarten Follow Upward (KFU) program, for example, has different staffing patterns in different schools and is viewed as two program units labelled unit Two and Three in Figure 1. The Reading/Language Arts program consists of three different components (Program Units 4, 5, and 6) at different grade levels.

Descriptions of the staffing pattern of each program unit will accompany the organization chart. The following diagram (Figure 6-2) is an example of displayed staffing pattern information. Here, each group leader supervises six instructional aides and one parent helper. Each aid works in one of six classrooms offering classroom instruction, while the parent helper visits the homes of Title I students in each group.

Figure 6–1
ILLUSTRATIVE ORGANIZATION CHART FOR ONE DEMONSTRATION DISTRICT

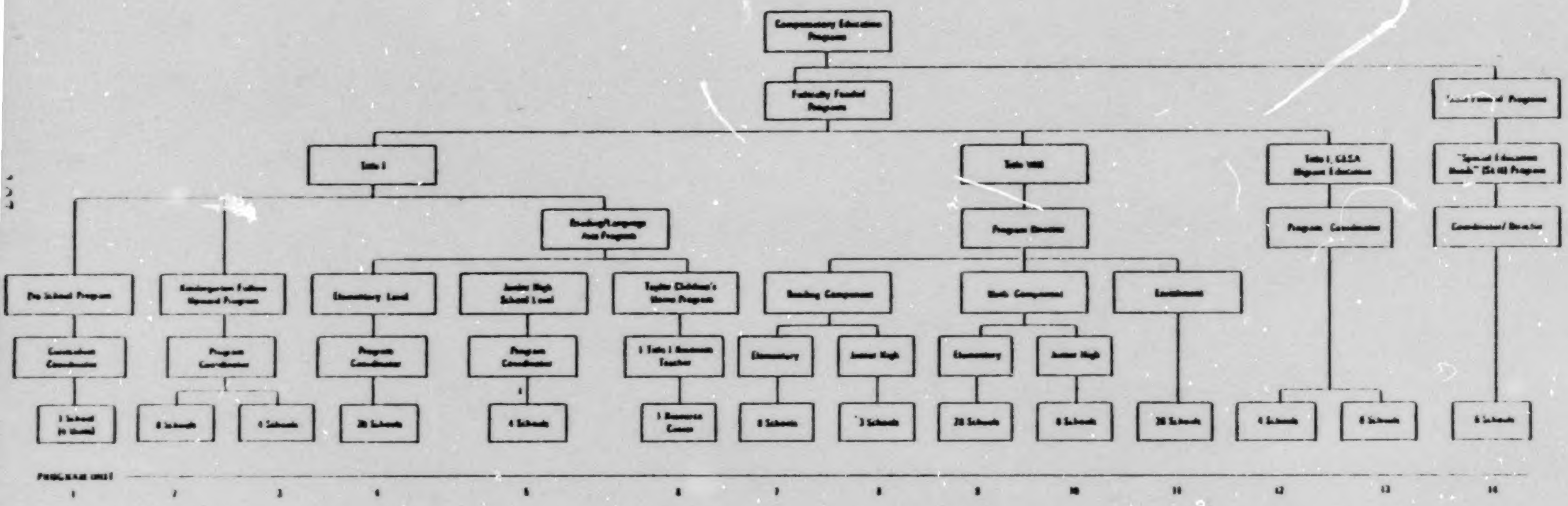
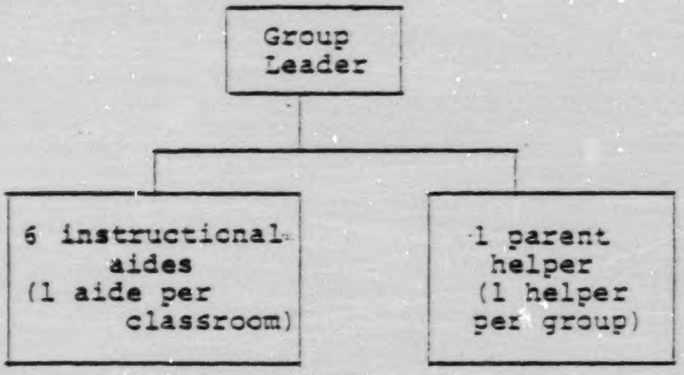

Compensatory Education Programs
Federally Funded Programs
Non-Federal Programs
Title I
Title VIII
Title I, ESEA Migrant Education
"Special Education Needs" Program
Reading/Language Arts Programs
Program Director
Program Coordinator
Coordinator/Director
Pre-School Program
Kindergarten Follow Upward Program
Elementary Level
Junior High School Level
Taylor Children's Home Program
Reading Component
Math Component
Enrichment
Curriculum Coordinator
Program Coordinator
Program Coordinator
Program Coordinator
1 Title I Resource Teacher
Elementary
Junior High
Elementary
Junior High
1 School (4 Units)
8 Schools
4 Schools
20 Schools
4 Schools
1 Resource Center
8 Schools
3 Schools
20 Schools
8 Schools
20 Schools
4 Schools
8 Schools
6 Schools
PROGRAM UNIT
1
2
3
4
5
6
7
8
9
10
11
12
13
14

FIGURE 6-2

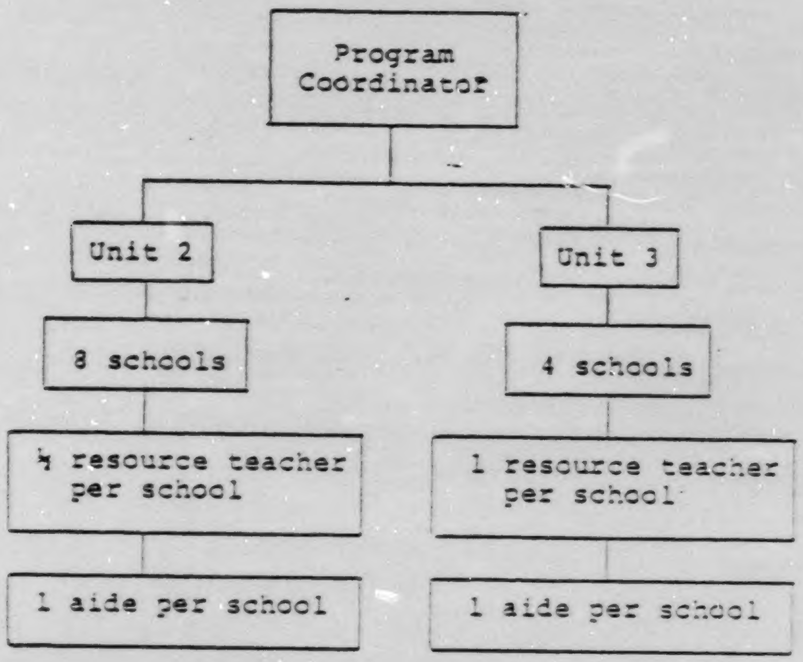
STAFFING PATTERN FOR PROGRAM UNIT 1


Group Leader
6 instructional aides (1 aide per classroom)
1 parent helper (1 helper per group)

In contrast, the KFU program has two distinct staffing patterns, shown as Program Units 2 and 3 in the organizational chart. The following diagram illustrates this distinction.

FIGURE 6-3

STAFFING PATTERNS FOR
PROGRAM UNITS 2 AND 3


Program Coordinator
Unit 2
Unit 3
8 schools
4 schools
½ resource teacher per school
1 resource teacher per school
1 aide per school
1 aide per school

In all, there are twelve schools served by the program. The eight schools in program unit two are staffed by four resource teachers and eight aides; each teacher is responsible for two schools and one aide is stationed at each school. In the four schools of program unit three, one resource teacher and one aide are stationed at each of the four schools. The two patterns display the program assignment of resource teachers based on the Title I enrollment at each school.

6.1.1.2 Program Variables

More detailed descriptions of the Title I and state-funded programs will be presented using the variables listed below.

1. Goals and Objectives

   We will examine both the overall goals of a program, e.g., to provide compensatory services to underachieving students or to students from poverty or target areas, and the more specific goals, e.g., to improve reading achievement.

2. Population Served

   Basic statistics defining the population served by each program will include student enrollment, grade span, and number of schools participating in a program.

3. Program Activities

   A summary of both the instructional and support services offered by each program will be presented.

4. Staffing

   The types of staff utilized in each program will be presented in full-time equivalents (FTEs). Table 6-1 provides an example of such a tabular presentation, summarizing the staffing patterns for two sample districts. As can be

TABLE 6-1

FULL-TIME EQUIVALENT STAFF MEMBERS IN TITLE I PROGRAMS FOR TWO ILLUSTRATIVE DISTRICTS BY STAFF POSITION

Staff	School District	
	Berkeley County	Harrison County
I. Instructional:		
A. Teachers: Pre-Kindergarten	6.5	
Kindergarten		
Elementary		
Secondary		
B. Aides: Instructional	33.0	25.0
Other		
C. Specialists: Reading		19.0
Math		
Other (Art, Music)		
II. Administrators/Supervisors	.75	1.0
III. Support Service:		
A. Professional	1.5	1.5
B. Para-professional		
Total	41.75	46.5

seen, one district primarily uses aides while the other uses reading specialists and aides to provide compensatory instruction.

5. Staff Training

Emphasis here will be on the types of staff for whom training programs are provided, the number of staff members who actually receive training, and the average amount of training per staff member. In addition, there will be a discussion of content areas covered and training strategies, such as workshops and demonstrations.

6. Instruction

Our discussion of a program's instructional component will center on such variables as:

- content of instruction (subject matter)
- individualization of instruction
- scheduling of instruction (frequency, duration)
- location of instruction (pullout vs. in-class)
- utilization of staff
- materials and supplies used

We will attempt to determine whether there is an instructional policy for the program as a whole, or whether variations exist among program components or individual grades and schools. Again, reference will be made to the organizational chart to elaborate on similarities and differences between the various levels of program structure.

7. Parental Involvement

Since the vast majority of both federal and state funded programs encourage a high degree of parental involvement, we shall examine both the type and degree of parental involvement in the various programs. First, we will describe formal parent involvement in compensatory programs through an examination of the structure and activities of the Parent Advisory Committee (PAC). We will describe the composition of the district-wide PAC, the frequency of meetings, average attendance at meetings, and degree of participation of PAC in various aspects of decision-making. We will also describe other program activities which are available for parents in general.

6.1.1.3 Program Overlap

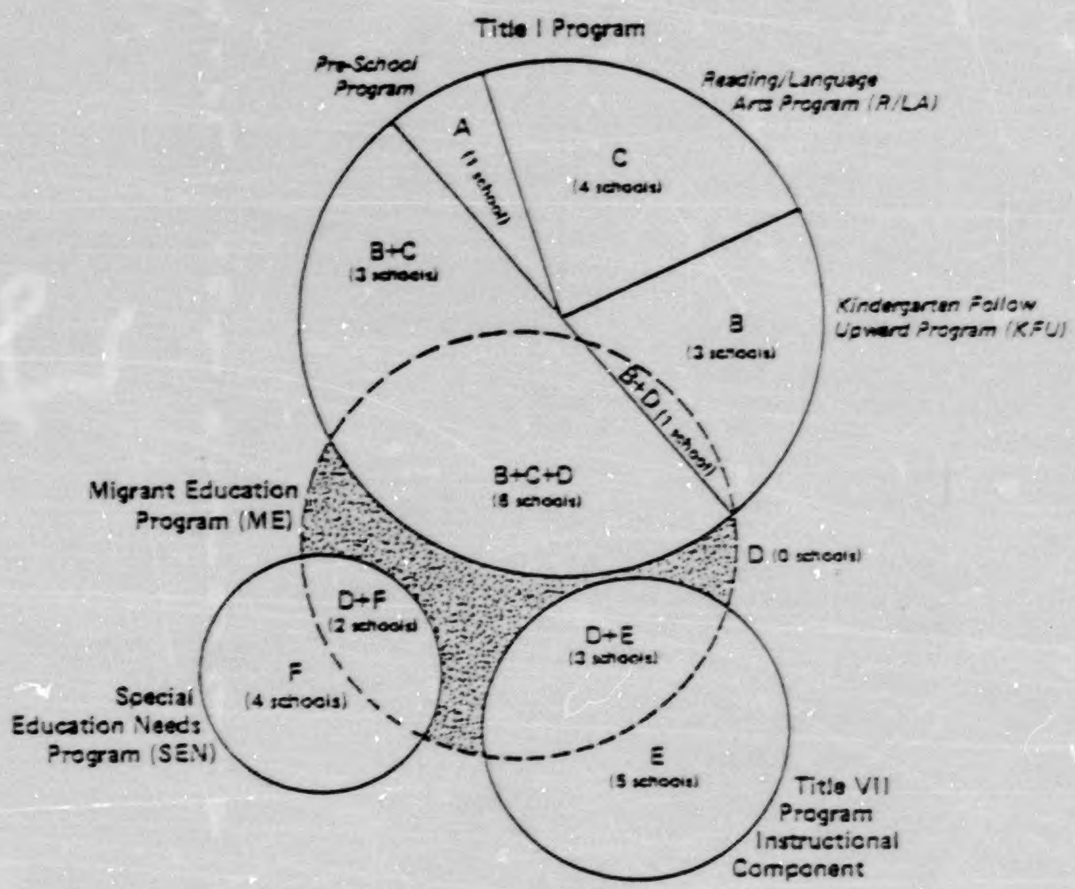
As schools gain or lose Title I services over the course of the Demonstration, it is possible that other compensatory programs will also be moved from school to school to reduce the impact of the changes. The program descriptions will also focus on the overlap of the several compensatory program components across schools within a district.

The graphic display of program overlap among schools in year one (Figure 6-4 is a useful descriptor and baseline for understanding program shifts in years two and three. Each of the circles is drawn to scale, based on the number of schools represented. Overlap is graphically displayed through common sectors or segments of circles.

6.1.2 Cross-District Program Description

Important though the within-district descriptions are as a baseline for identifying changes which might result from changes in allocation policy, we are less interested in

Figure 6–4
COMPENSATORY PROGRAM OVERLAP IN ONE ILLUSTRATIVE DISTRICT


Title I Program
Pre-School Program
Reading/Language Arts Program (R/LA)
A (1 school)
C (4 schools)
B+C (3 schools)
Kindergarten Follow Upward Program (KFU)
B (3 schools)
B+D (1 school)
B+C+D (6 schools)
Migrant Education Program (ME)
D (0 schools)
D+F (2 schools)
F (4 schools)
Special Education Needs Program (SEN)
D+E (3 schools)
E (5 schools)
Title VII Program Instructional Component

A = Title I, Pre-School Program
B = Title I, Kindergarten Follow Upward Program
C = Title I, Reading / Language Arts Program
D = Migrant Education Program
E = Title VII Program
F = Special Education Needs Program

describing individual districts than in identifying patterns which might be found across districts. Our primary purpose, then, is to use the rich program descriptors available for each district to develop patterns of program delivery. The within-district descriptions will rely heavily on the districts' own terminology and organizational frameworks. The cross-district description will utilize a set of categories which parallel the variables introduced above, but are common to all districts. This will allow us to group districts on dimensions which might reflect changes related to the reallocation of funds.

The variables used here will include, but not be limited to:

- types of staff who provide services
  - -specialists vs. classroom teachers
  - -professionals vs. paraprofessionals
- content of services
  - -wide vs. narrow range of services
- instructional patterns
  - -location:
  - -focus on materials vs. staff
  - -direct instruction vs. training and supervision

Similar to the within-district descriptions, the data for cross-district comparisons will be predominantly qualitative, and no statistical analyses will be performed. We will count staff members in different categories and may use budget allocations to assign values to different parts of the program. We may, for example, consider the amount of money allotted to instructional services in comparison to the amount given to support services, or the proportion of salaries allocated for staff who work directly with students versus those who only administer the program or supervise others.

6.1.3 Proposed Program Changes

Finally, we will describe the specific program changes which each district proposes to make during the implementation years. Detailed changes in the district allocation policy are discussed in other sections of this analysis plan. We will endeavor to link such changes to the programmatic changes described here. We will further attempt to determine whether programmatic changes are made independently or concomitantly with changes in allocation policy. Our intention is to describe planned changes by examining the variables outlined above. The organization and overlap charts will also be used to describe proposed changes.

In subsequent years, the program description approach will address the nature and implications of the actual changes made under the Demonstration in individual programs and throughout whole districts. Emphasis again will be on the identification of cross-district patterns.

6.2 Services Delivered by Instructional Specialists

6.2.1 Research Objectives

Within each compensatory program described at the district level, there is undoubtedly a certain amount of variation in the services actually delivered to students. In order to measure this variation, and thereby provide a more accurate picture of compensatory programs, the program descriptions gathered will be augmented by data from instructional specialists.

Although instructional specialists are not the only persons who provide compensatory services, they are central to program delivery in a sizeable proportion of the Demonstration districts. Their work, therefore, merits our attention. There are also practical advantages to focusing on services delivered by specialists: the population of all providers of compensatory services--e.g., specialists, teachers, aides, volunteers--varies from district to district, making it difficult to select a sample of providers to represent all programs. The population of specialists in any district, on the other hand, is relatively discrete and therefore is more easily identifiable. To the extent that specialists are central providers of services in a given district, a description of the instruction they provide represents a useful supplement to the qualitative descriptions outlined in section 6.1. In those cases where specialists are not the primary providers, program descriptions will be limited to those qualitative descriptions.

The question to be addressed with this approach is, Does the instruction provided by specialists in different compensatory programs vary within and across districts, and does it vary over time? Again considering the situation of an increased number of schools and/or students served by

Title I, a number of changes in the specialists' utilization of time are possible. Specialists may serve more students by teaching shorter periods. They may shift their work from direct instruction to the supervision of other, possibly less expensive staff. Or, if they work in more schools, they may spend more time in traveling. Their instructional strategies may also change. If they have to work with larger groups of students, for example, their instruction may be less individualized. The research question will be answered by examining the specialists' use of time and the ways in which they provide instruction.

6.2.2 Design

The design for the analysis of services delivered by specialists is shown in Table 6-2. Within any one year, the design has only two factors: district (sixteen levels) and compensatory funding source. Compensatory funding source will have four levels: Title I, other federal, state, and local. Although standard categories will be used for funding source, note will be made in each district of the names of programs comprising each category. Funding sources for districts where instructional specialists are not central providers will be excluded from these analyses. Thus, some of the design cells will be empty.

6.2.3 Data Sources and Variables

There are two data sources for the analysis of services delivered by specialists: the Instructional Schedule and the Program Description Modules.

6.2.3.1 Instructional Schedule

The primary objective of the Instructional Schedule is to estimate the amount of time per week specialists spend instructing children. The Schedule will be completed for a

TABLE 6-2

DESIGN FOR ANALYSIS OF PROGRAM DELIVERY BY SPECIALISTS

	DISTRICT BY YEAR		
	1975-76	1976-77	1977-78
	District	District	District
Compensatory Funding Source	1, 2, 3, ... 16	1, 2, 3, ... 16	1, 2, 3, ... 16
Title I			
Other Federal			
State			
Local			

typical work week by all compensatory language arts and mathematics specialists in each of the Demonstration districts that use specialists. The first set of variables which can be obtained from the Instructional Schedule provides an overall breakdown of the way specialists spend their time:

- Number of hours per week employed by funding source,
- Proportion of time spent on instruction by funding source, and
- Proportion of time spent on other tasks by funding source.

The second set of variables provides a description of how the instructional time is spent in each funding source category. The basic unit for most of these variables is an instructional period. The total data set for each specialist is the number of instructional periods per week spent in one funding source program. All variables in both sets can be constructed directly from items on the schedule. The variables include:

- Number of instructional periods per week,
- Average length of an instructional period,
- Content of instruction,
- Size of group taught,
- Grade level(s) of students taught, and
- Role of the specialist in instruction (teach vs. supervise and teach)[1]

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[1] Specialists who never teach children directly (i.e., those whose job is to supervise or train others) will not be included in the analyses of these variables, since their role cannot legitimately be labelled as instructional.

6.2.3.2 Program Description Modules

The Program Description Modules provide a more detailed description of the compensatory language arts and mathematics instruction provided by specialists. These two subjects were chosen for study because they are the areas in which most Title I effort is concentrated. The Modules will be filled out by all language arts and mathematics specialists in a district. In order to obtain an accurate description of how specialists provide instruction, the Modules ask about instruction provided to a specific group of students, rather than asking about the specialists' teaching in general. Data from the Instructional Schedule will be used to identify the appropriate group and the time at which it meets. The variables from the Program Description Modules can be divided into two categories:

Setting of instruction:

- Person who provides instruction
- Location of instruction
- Number of children meeting together
- Amount of instruction per week
- Length of time in program

Strategies for instruction:

- Details of teacher's lesson plans
- Means of assessing students' performance at the beginning of the year
- Existence of performance objectives
- Basis for assigning lessons
- Instructional groupings
- Use of materials
- Means of assessing students' progress
- Extent of individualization

The same set of variables will be used to describe both language arts and mathematics instruction. All variables except the extent of individualization can be taken directly from the questionnaire items. The individualization variable(s) will be developed through a combination of judgmental and empirical scale construction with items pertinent to the scale selected judgmentally. The homogeneity of this scale will be assessed using cluster and/or factor analytic techniques. Finally, item weights will be assigned, the scale(s) scored, and internal consistency assessed using coefficient ALPHA.

6.2.4 Analytic Procedures

6.2.4.1 Descriptive

The first step of the analysis will be to compute descriptive statistics for all variables by district and funding source category. Means and standard deviations will be computed for continuous variables and frequency distributions for categorical variables. (Table 6-3 shows the format for presenting these computations.) We will also examine crosstabs for selected combinations of variables such as length of instructional period by size of group taught, or by person providing instruction.

6.2.4.2 Comparative

In addition to describing the instruction delivered by specialists, we want to compare the instruction provided to determine whether specialists in different compensatory funding source categories provide significantly different instruction. The comparative analyses will include two factors: district (16 levels) and funding source (Title I, Other Federal, State, and Local). The strategy chosen for testing for significant effects depends on the response scale of the variable being analyzed. For categorical variables (such as persons providing instruction), Chi-square analyses will be performed. For

TABLE 6-3

LENGTH OF INSTRUCTIONAL PERIOD AND NUMBER OF STUDENTS TAUGHT PER INSTRUCTIONAL PERIOD IN 1975-76 BY COMPENSATORY FUNDING SOURCE*

Compensatory Funding Source	Length of Instructional Period	Number of Students Taught Per Instructional Period
Title I	$\bar{X}$ S.D.	$\bar{X}$ S.D.
Other Federal	$\bar{X}$ S.D.	$\bar{X}$ S.D.
State	$\bar{X}$ S.D.	$\bar{X}$ S.D.
Local	$\bar{X}$ S.D.	$\bar{X}$ S.D.

*This design is shown for one district only. Analyses will include district as a factor.

continuous, ordered, or dichotomous variables (such as length of instruction), an unweighted means analysis of variance will be used. Since there will be districts which do not have compensatory programs using specialists in all funding categories, the design for the analysis will be unbalanced. As a result, only the main effects of district and funding source and not their interaction can be estimated. This analysis tends to be more conservative than a balanced analysis of variance because the interaction enters the error term. Post hoc comparisons of the Tukey[2] or Scheffé[3] type will be used to test the significance of the differences between Title I and other funding sources. Estimating changes in specialists' instruction across years of the Demonstration requires the addition of year as a factor in the analyses.

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[2] Hays, William L., *Statistics for the Social Sciences*. New York: Holt, Rinehart, Winston, 1973. Pages 605-612.

[3] Winer, B.J., *Statistical Principles in Experimental Design*. New York: McGraw-Hill, 1971. Page 198.

6.3 Distribution of Programs Across Schools

6.3.1 Research Objectives

Thus far we have looked at compensatory services by funding source, essentially describing one program at a time. Another way to approach the question of the effect of reallocation of Title I funds on program delivery is to describe the services as they exist in the schools. Program descriptions at the school level are necessary additions to descriptions by program administrators and instructional specialists for several important reasons.

First, schools may have combinations of compensatory services from several programs which are difficult to describe accurately at a higher level. Such combinations are indicators of the way resources are distributed in a district, and since resource distribution may be affected by the reallocation of Title I funds, we are interested in examining it. It may be that the total amount of compensatory services delivered to different types of schools in the Demonstration changes during the implementation years. It may also be that the amount of program overlap--the extent to which programs from different funding sources serve the same schools and where they do, the extent to which they serve the same grades and the same functions--changes.

Second, the services delivered and the mode of delivery within a program may vary from school to school. Analyzing this possible source of variation in the language arts and mathematics components of the Title I and State Compensatory programs should increase the accuracy of the descriptions of these programs.

Third, school-level descriptions are necessary adjuncts to those provided by program administrators and specialists because some aspects of compensatory education are organized within schools and therefore can only be described at that level. We are particularly interested here in examining services provided to adults through compensatory programs, specifically staff development and parent involvement because both might be affected by the reallocation. For example, if a district decides to deconcentrate the Title I program, it may increase the training provided to staff members so that more people will have the skills to instruct the increased number of students.

These reasons for describing programs at the school level can be translated into three research questions:

1. Are there differences among types of schools in the total compensatory services they receive and in the overlap of programs, and does the distribution of resources change during the Demonstration?
2. Do types of schools differ in their programs for staff development and parent involvement and do these programs change over time?
3. To what extent do schools vary in the Title I and State funded compensatory services they offer, and does this variation change during the implementation of the Demonstration?

6.3.2 Design

The basis of the design for answering the first two of the three school-level research questions is type of school. In all districts there will be at least two types of schools: schools which are currently (1975-76) receiving Title I funds and schools which will receive Title I funds during the implementation years of the Demonstration (1976-1977 and 1977-1978). In some districts there may also be a third type: schools which never receive Title I funds. For the analyses of staff development and parent involvement, district and school type are the only factors

TABLE 6-4

DESIGN FOR ANALYSES OF COMPENSATORY STAFF DEVELOPMENT AND PARENT INVOLVEMENT

	DISTRICT BY YEAR		
	1975-76	1976-77	1977-78
	District	District	District
School Type	1, 2, 3...16	1, 2, 3...16	1, 2, 3...16
Schools currently receiving Title I			
Schools receiving Title I during implementation years only			
Schools never receiving Title I services			

in the design, as shown in Table 6-4. For the analyses of the distribution of compensatory activities, compensatory funding source will be added as a third factor. This design for one district is shown in Table 6-5.

For the remaining research question, the analysis of Title I and State-funded compensatory programs, the design for the first year is based on grade span rather than school type: grades 1-3, 4-6, 7-8. This design is shown in Table 6 - 6. Clearly, the breakdown by grade span can only be done for schools and districts in which programs exist in more than one span.

6.3.3 Data Sources and Variables

All data for the school-level program description will be gathered through the Principal Questionnaire. This instrument has several purposes but the major one is to obtain a comprehensive description of the compensatory services in a school. The questionnaire consists of one form covering school and principal background information and asks for an overview of compensatory activities by funding source. It also requests a description of compensatory staff development and compensatory parent involvement activities. The overview of compensatory activities is divided into instructional and support activities focussed on activities for students. The staff development items do not specify funding source and the parent involvement items focus on Title I. This form is to be completed by all elementary school principals in the Demonstration districts.

The Principal Questionnaire also has two supplements, one for Title I and one for State-funded compensatory programs. (Principals only complete the supplements for the program(s) operating in their school.) Each supplement asks for the same information about the compensatory language arts and mathematics instruction provided by Title I and State-funded compensatory

TABLE 6-5

DESIGN FOR ANALYSES OF THE DISTRIBUTION OF COMPENSATORY ACTIVITIES*

School Type	1975-76 Compensatory Funding Source				1976-77 Compensatory Funding Source				1977-78 Compensatory Funding Source			
	Title I	Other Federal	State	Local	Title I	Other Federal	State	Local	Title I	Other Federal	State	Local
Schools currently receiving Title I												
Schools receiving Title I during implementation years only												
Schools never receiving Title I services												

*This design is shown for one district only. Analyses will include district as a factor.

TABLE 6-6

DESIGN FOR DESCRIBING TITLE I AND STATE-FUNDED COMPENSATORY PROGRAMS

	DISTRICT BY YEAR		
	1975-76	1976-77	1977-78
	District	District	District
Grade Span	1, 2, 3...16	1, 2, 3...16	1, 2, 3... 16
1-3			
4-6			
7-8			

programs. Space is provided for describing program differences among different grade spans.

The variables for the school-level program descriptions can be grouped under four headings: Overview of compensatory activities for students; (which includes total services delivered and program overlap); Title I and State-funded compensatory program descriptions; Compensatory staff development; and Compensatory parent involvement.

Overview of compensatory activities for students

- Number of students receiving any compensatory service
- Type of instructional activity
- Type of support activity

The overview variables are taken directly from questionnaire items.

Title I and State Compensatory Education

- Number of students participating by grade level
- Timing of services (i.e., during summers or school year; during regular school day or outside it)
- People providing instruction
- Class size
- Location of instruction
- Amount of instruction
- Grouping methods
- Group for regular instruction

The analyses of Title I and State-funded compensatory programs will be done separately, and language arts instruction will be separated from mathematics instructions, but all analyses will include these same variables. The variables, which will be taken directly from questionnaire items, will be analyzed singly and in combinations such as:

- People providing instruction by amount of instruction
- People providing instruction by grouping methods

Compensatory Staff Development

- Number of schools having special training (i.e., workshops, seminars and lectures) for compensatory education.
- Initiators of that training (i.e., persons in school, from district office, from outside the district)
- For training initiated in the school:
    - Time of training
    - Training areas
    - People receiving training by amount of training
- Other types of staff development activities initiated in the school.

The variables are to be taken directly from items in the questionnaire.

Compensatory Parent Involvement

- Number of schools having Parent Advisory Councils (PACs)
- Frequency of PAC meetings
- Number of parents attending PAC meetings
- Responsibilities of the PAC
- Amount and type of parent involvement in compensatory activities outside the PAC

If a school has more than one PAC, the principal is asked to describe the Title I PAC.

6.3.4 Analytic Procedures

6.3.4.1 Descriptive

Descriptive statistics will be computed for all variables. Means and standard deviations will be computed for continuous variables and frequency distributions for categorical variables. Table 6-7 displays the format for presenting statistics for staff development and parent involvement, and Table 6-8 shows the format for the overview of compensatory activities data. The format for the Title I and state-funded compensatory programs will be like the format for staff development with grade span substituted for school type.

6.3.4.2 Comparative

The analysis strategies chosen for comparing compensatory programs at the school level depend first on the nature of the response scale of the variable being analyzed. Chi-square analyses will be used with categorical variables and some form of analysis of variance will be used with the continuous, ordered or dichotomous variables.

TABLE 6-7

FREQUENCY OF AND NUMBER OF PARENTS ATTENDING PAC MEETINGS BY TYPE OF SCHOOL IN 1975-76.

School Type	Frequency of Meetings	Number of Parents Attending
Schools currently receiving Title I	% once or twice a year % every few months % once a month % more than once a month	$\bar{X}$ S.D.
Schools receiving Title I during implementation years only	% once or twice a year % every few months % once a month % more than once a month	$\bar{X}$ S.D.
Schools never receiving Title I services	% once or twice a year % every few months % once a month % more than once a month	$\bar{X}$ S.D.

TABLE 6-8

NUMBER AND PERCENT OF SCHOOLS PROVIDING COMPENSATORY READING INSTRUCTION IN 1975-76 BY FUNDING SOURCE AND SCHOOL TYPE

School Type	Compensatory Funding Source			
	Title I	Other Federal	State	Local
Schools currently receiving Title I	N %	N %		
Schools receiving Title I during implementation years only	N %			
Schools never receiving Title I services	N %			

The form of the analysis of variance will depend on the design being used.

Analyses by School Type and by Grade Span. The analyses of school type, to be used with staff development and parent involvement variables, will use two factors for any one year of the Demonstration: District (sixteen levels) and school type (two or three levels).[4] The analyses by grade span, to be used with Title I and state-funded compensatory program descriptions, will also have two factors: district (sixteen levels) and grade span (three levels). For analyses of change over time in both designs, year will be added as a third factor.

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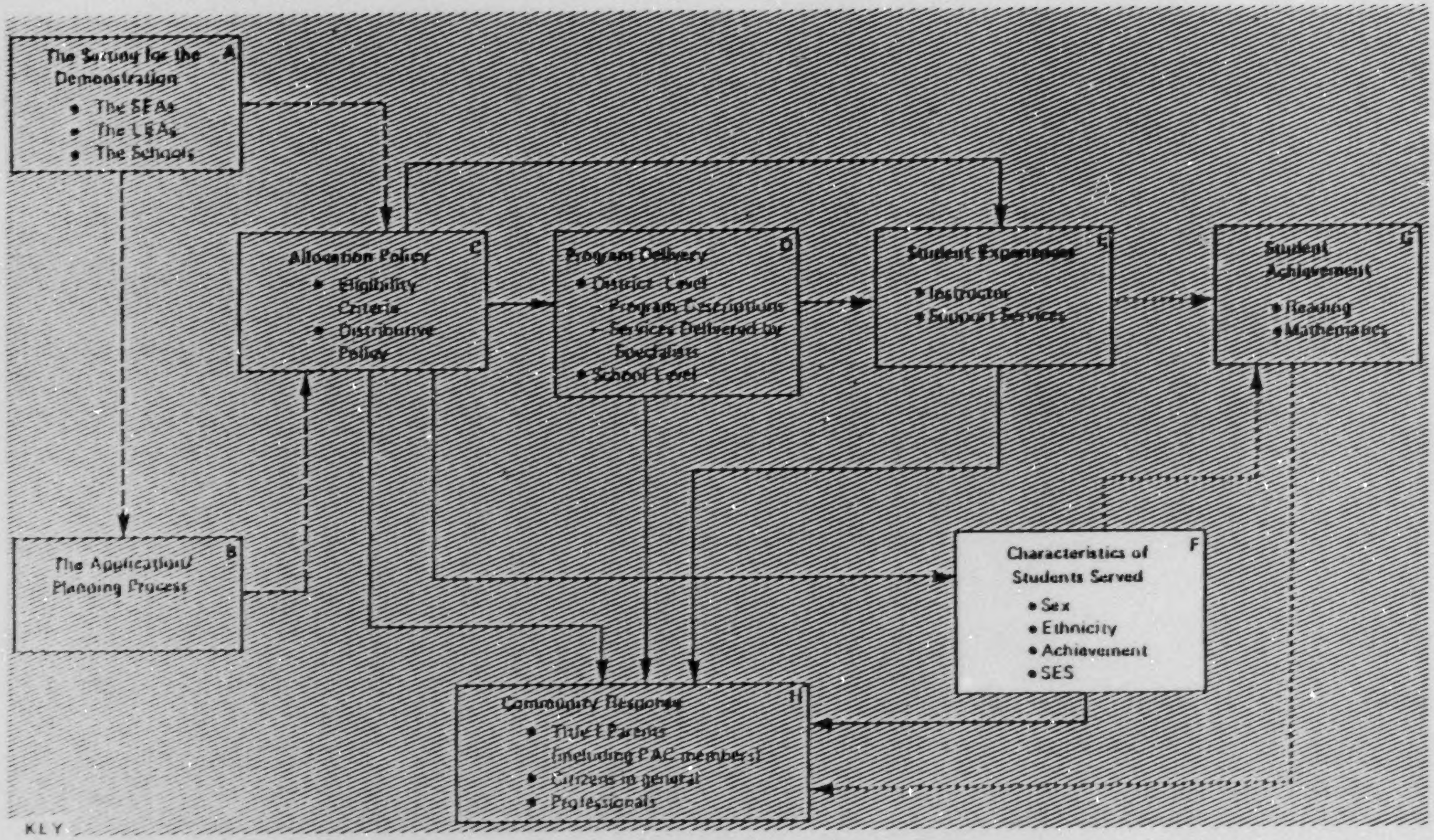
[4] All districts will be included in the design with two school types: currently Title I and Title I during the implementation years only. For those districts having a third school type--never Title I--the three-level design will also be used.

The appropriate technique for testing for significant differences in these designs is a weighted means analysis of variance. Since there may be districts which do not have compensatory programs in all grade spans, or do not have state compensatory programs, the design for the analyses may be unbalanced. In such cases, only main effects and interactions can be estimated. These analyses will be more conservative than balanced analyses of variance because the interaction enters the error term. Post-hoc tests will be used to estimate the significance of specific comparisons.

Analyses by School Type by Funding Source. For each year, the analyses will include three factors: district (sixteen levels), school type (two or three levels based on Title I allocation policy participation), and compensatory funding source (four levels). One of the factors, funding source, is not completely crossed with type of school, there being by definition no Title I in non-Title I schools. In this situation, regression methods should be used since the standard computational methods for crossed designs do not apply. The choice of the regression approach means that the effects of interest must be explicitly coded in the analyses. The code indicates the value assigned to each level of the factors to be entered in an equation. Explicit coding methods not only solve the problem of an unbalanced design, but also have the advantage of reflecting the comparison being made directly in the coding scheme. This obviates the need for post-hoc comparisons. A detailed example of the type of coding scheme which will be developed including the coding for change analyses is presented in Section 3.4.2.

Chapter 7

CHARACTERISTICS OF STUDENTS SERVED


The Setting for the Demonstration
A
• The SEAs
• The LEAs
• The Schools
Allocation Policy
C
• Eligibility Criteria
• Distributive Policy
Program Delivery
D
• District Level
– Program Descriptions
– Services Delivered by Specialists
• School Level
Student Experiences
E
• Instructor
• Support Services
Student Achievement
G
• Reading
• Mathematics
The Application/ Planning Process
B
Characteristics of Students Served
F
• Sex
• Ethnicity
• Achievement
• SES
Community Response
H
• Title I Parents (including PAC members)
• Citizens in general
• Professionals

KEY

- – – – – – Links to be analyzed conceptually
- ———— Links to be analyzed statistically for full range of districts
- ·········· Links to be analyzed statistically, where possible, for a subset of districts

7.0 STUDENT CHARACTERISTICS

7.1 Research Objectives

Perhaps the most obvious link between allocation changes and hypothetical outcomes is in the area of student characteristics. It is very likely that the characteristics of students served by Title I (and possibly other compensatory programs) will change as the result of (1) a change in student selection criteria, (2) a change in school selection criteria (resulting in the addition of more schools in most instances), or (3) a combination of the two.

If student participation is determined entirely by achievement, for example, it is possible, although not necessary, that the number of poor students served by Title I will decline during the implementation years of the Demonstration. It is also possible that as more schools (serving varying population groups) are added, the characteristics of Title I students may change, independent of a change in within-school selection criteria. Whatever their cause, shifts in the characteristics of students served by Title I are policy relevant. As different constituencies are served, the program changes its essential nature, independent of changes in programs offered or experiences received.

The basic research question to be addressed in examining student experiences is: Do different types of students receive Title I services as a result of the reallocation of Title I funds? Determining the effects of reallocation requires a comparison of the characteristics of Title I students before the granting of waivers with the characteristics of Title I students during the implementation years of the Demonstration. In order to understand fully the changes in Title I, it is important to consider the characteristics of Title I students in two contexts: in comparison with students in other compensatory programs and with students in other cells of the student sampling design.

Examining the characteristics of students served by different funding sources is important because virtually all of the Demonstration districts have compensatory programs other than Title I. If we find no changes in the characteristics of students participating in other compensatory programs, we would infer that Title I does not affect other programs on this dimension and therefore, other programs act independently. If the characteristics of students in other programs parallel the changes in Title I--the proportion of poor children participating decreases in both Title I and the state-funded compensatory programs, for example--we should then consider the possibility that the Demonstration has led to changes in other programs, in which case, spin-off effects which multiply Title I impact might be inferred. If changes in characteristics of students in Title I show reverse trends in other programs--for example, the proportion of poor students in the State-funded compensatory programs increases as their proportion in Title I decreases--we might conclude that other programs are reaching students dropped by Title I, which might soften the impact of reallocation policies.

Since it is possible for students to receive services from more than one compensatory program, we also want to determine whether there are differences in the types of students receiving various combinations of Title I and other programs.

Examining the characteristics of Title I students in the context of the student sampling design requires comparisons of Title I and non-Title I students in schools that currently receive Title I, that will receive Title I during the implementation years of the Demonstration, and (where appropriate) schools that will never receive Title I services.

This design is described in more detail in Section 7.1. As noted above, describing all groups is necessary for understanding changes in Title I. If there is a shift in one part of a system, we want to see what happens in the rest of the system, for it may be that the system as a whole is changing. Further, knowledge of the characteristics of groups during year one may shed light on changes in these characteristics during years two and three. If, for example, the proportion of black students in Title I declines over the course of the Demonstration, and we document that the schools added to Title I during the implementation years were all white schools, then we would conclude that at least part of the change in the ethnic make-up of Title I students came from the addition of schools, not from the selection of different types of students within schools.

Separating students by grade level is important in all contexts because programs are often split administratively between grades 3 and 4 and therefore may serve different types of children.

The basic research question, then, can be translated into three more specific questions, to be addressed at both grade levels.

1. Do the characteristics of different compensatory programs differ at any one point in time during the Demonstration, and do they change over time?
2. Do different types of students receive different combinations of Title I and other compensatory programs at any one point in time during the Demonstration, and is there a change over time?
3. Do the characteristics of Title I and non-Title I students in different types of schools differ at any one point in time during the Demonstration, and do they change over time?

7.2 Design

The first two questions call for a research design that is distinct from the design needed to answer the third. To analyze student characteristics by compensatory funding source or funding source combination, the design for each district for any one year has two factors: compensatory funding source (Title I, other Federal, State, and Local) or funding source combination (Title I only, Title I and other Federal, Title I and State and Local) by grade level. (See Tables 7-1 and 7-2). Characteristics of students served by different funding sources or combinations will be analyzed for a district only when cell sizes are adequate.

To analyze the characteristics of Title I and non-Title I students in different types of schools by grade level, the third question, the student sampling design will be used. (See Table 7-3). Sample schools will be drawn from two strata in districts where all schools receive Title I and from three strata in districts where not all schools receive Title I. In the former, one stratum consists of schools receiving Title I all three years and the other consists of schools receiving Title I during the implementation years only, years two and three of the Demonstration. In the latter case, the three strata are schools receiving Title I all three years, schools receiving Title I in the implementation years and schools never receiving Title I. Within each sample, two students are selected from each third and fourth grade classroom as follows: In classrooms with only Title I or only non-Title I students, the two students are drawn randomly from the class at large. In classes containing both Title I and non-Title I students, one student is randomly selected from each group. This design allows us to estimate characteristics of Title I/non-Title I students' grade level by school type.

TABLE 7-1

DESIGN FOR ANALYSES OF STUDENT CHARACTERISTICS BY FUNDING SOURCE AND GRADE

	1975 - 76		1976 - 77		1977 - 78	
Compensatory Funding Source	Gr. 3	Gr. 4	Gr. 3	Gr. 4	Gr. 3	Gr. 4
Title I						
Other Federal						
State						
Local						

TABLE 7-2

DESIGN FOR ANALYSES OF STUDENT CHARACTERISTICS BY FUNDING SOURCE COMBINATION AND GRADE

	1975 - 76		1976 - 77		1977 - 78	
Funding Source Combinations	Gr. 3	Gr. 4	Gr. 3	Gr. 4	Gr. 3	Gr. 4
Title I only						
Title I and Other Federal						
Title I and State						
Title I and Local						

TABLE 7-3

BASIC STUDENT SAMPLING DESIGN

School Type	1975-76				1976-77				1977-78			
	Student Type				Student Type				Student Type			
	Students Rec'g Title I		Students Not Rec'g Title I*		Students Rec'g Title I		Students Not Rec'g Title I		Students Rec'g Title I		Students Not Rec'g Title I	
	Gr 3	Gr 4	Gr 3	Gr 4	Gr 3	Gr 4	Gr 3	Gr 4	Gr 3	Gr 4	Gr 3	Gr 4
Schools currently receiving Title I												
Schools receiving Title I during implementation years only	▨	▨										
Schools never receiving Title I services	▨	▨			▨	▨			▨	▨		

NOTE: *Underachieving Students not receiving Title I are those students scoring at or below the 40th percentile on a standardized reading achievement test.

▨ These cells by definition cannot exist

7.3 Data Sources and Variables

Data on student characteristics come from three sources:

- Class Roster
- Student School Record Information Form (SSRIF)
- Parent Interview

The Class Roster will provide information on all third and fourth grade students in sample schools and will be used for analyses by funding source and funding source combination. The SSRIF provides data only for sample students and will be used for analyses of groups in the student sampling design. The Parent Interview will be used only for the Title I sample. Variables on achievement and poverty which appear in more than one instrument become more refined as the group described narrows--as one moves from the Class Roster to the Parent Interview. The most fully described group is Title I students for whom data are available from all three instruments.

7.3.1 Class Roster. This form, filled out by all classroom teachers in grades 3 and 4 in sample schools, provides unduplicated counts of students participating in compensatory programs. Each teacher lists all the children in his or her class, characterizes them on four dimensions, and indicates in which compensatory programs, if any, each child participates. The characteristics for which information is provided are:

- Sex
- Ethnicity
- Reading achievement level
- Free lunch program participation

The student characteristics will be taken directly from items on the Roster. Distribution of students into appropriate funding source categories will require sorting district-specific programs into the standard funding source categories.

7.3.2 Student School Record Information Form (SSRIF). The SSRIF will be completed for each student in the sample by the student's classroom teacher. This instrument provides data for five student characteristics:

- Reading achievement level
- Math achievement level
- Age
- Aid to Family with Dependent Children (AFDC) status
- First language if other than English

These five variables which are taken directly from items in the SSRIF will be analyzed individually and in the following combinations:

- Reading achievement by AFDC
- Reading achievement by sex (from Class Roster)
- Reading achievement by first language
- Math achievement by AFDC
- Math achievement by sex
- Math achievement by first language

7.3.3 Parent Interview. The major objective of the Parent Interview is to obtain accurate estimates of the family characteristics of Title I students in the sample. Parents of all Title I students in the sample will be interviewed. This instrument provides data for five variables:

- Income
- Educational Background
- Transfer payments received and public assistance
- Employment status
- Socio-economic status (SES)

TABLE 7-4

SEX AND RACE OF STUDENTS IN DIFFERENT COMPENSATORY FUNDING SOURCE CATEGORIES BY GRADE LEVEL IN 1975-76

Compensatory Funding Sources	Sex			Race		
		Grade			Grade	
		3	4		3	4
Title I	% male % female			% black % white % other		
Other Federal	% male % female			% black % white % other		
State	% male % female			% black % white % other		
Local	% male % female			% black % white % other		

TABLE 7-5

READING ACHIEVEMENT LEVELS OF STUDENTS IN THE BASIC STUDENT SAMPLING DESIGN IN 1975-76

School Type	Student Type			
	Students Rec'g Title I		Students Not Rec'g Title I	
	Grade		Grade	
	3	4	3	4
Schools Currently receiving Title I	$\bar{X}$ S.D.	$\bar{X}$ S.D.	$\bar{X}$ S.D.	$\bar{X}$ S.D.
Schools receiving Title I during implementation years only	$\bar{X}$ S.D.	$\bar{X}$ S.D.	$\bar{X}$ S.D.	$\bar{X}$ S.D.
Schools never receiving Title I services	$\bar{X}$ S.D.	$\bar{X}$ S.D.	$\bar{X}$ S.D.	$\bar{X}$ S.D.

Each of the first five variables will be taken directly from the interview. The SES variable will be created from the income and educational background items, and will be crossed with other variables as follows:

- SES by reading achievement level (from SSRIF)
- SES by math achievement level (from SSRIF)
- SES by ethnic background

7.4 Analytic Procedures

7.4.1 Descriptive

Descriptive statistics will be computed for all variables and variable combinations described above. Means and standard deviations will be computed for the continuous variables and frequency distributions for categorical variables. Table 7-4 shows the format for presenting statistics computed by funding source category (presentation for funding source combination is parallel) and Table 7-5 shows the format for computations in the student sampling design. Assuming SES to be the best index of poverty, SES will be correlated with Free Lunch enrollment and AFDC status to obtain a rough indication of the accuracy of these measures as proxies for poverty.

7.4.2 Comparative

Analysis of variance strategies will be used for comparing characteristics of different groups of students. (An exception will be made for analyses of ethnicity where Chi-square techniques will be used because of the categorical response scale.) The choice of analysis of variance strategy will depend on the design being used.

Analyses by Compensatory Funding Source and Funding Source Combination

These two designs call for the same type of analysis. Both have two factors for each year: district (sixteen levels), funding source (four levels), or funding source combination (four levels), and grade (two levels). Estimates of change over time will be computed by including data for more than one year and adding year as a factor in the analyses. Since there will be districts which do not have students in every funding source and funding source combination, the design for the analysis will be unbalanced. As a result, only main effects and not interactions will be estimated. This analysis will be more conservative than a balanced analysis of variance because the interaction enters the error term. Post-hoc tests will be used to estimate the significance of specific comparisons.

Analyses by Student Sampling Design

The analysis for any single year will include four factors: district ($\leq$ sixteen levels), school type (two or three levels based on Title I allocation policies participation), student Title I participation (two levels), and grade (two levels).[4] One of the factors, student Title I participation, is not completely crossed with type of school, there being by definition no Title I students in non-Title I schools. In this situation, regression methods will be used since the standard computational methods for crossed designs do not apply. The choice of the regression approach means that the effects of interest must be explicitly coded in the analysis. The codes indicate the value assigned to each level of the factors to be entered in an equation. Explicit coding methods not only solve the problem of an unbalanced design but also have the advantage of reflecting the comparison being made directly in the coding scheme. This obviates the need for post-hoc comparisons. An example of the type of coding scheme which will be developed, including coding for change analyses, is presented in Section 8.4.2.

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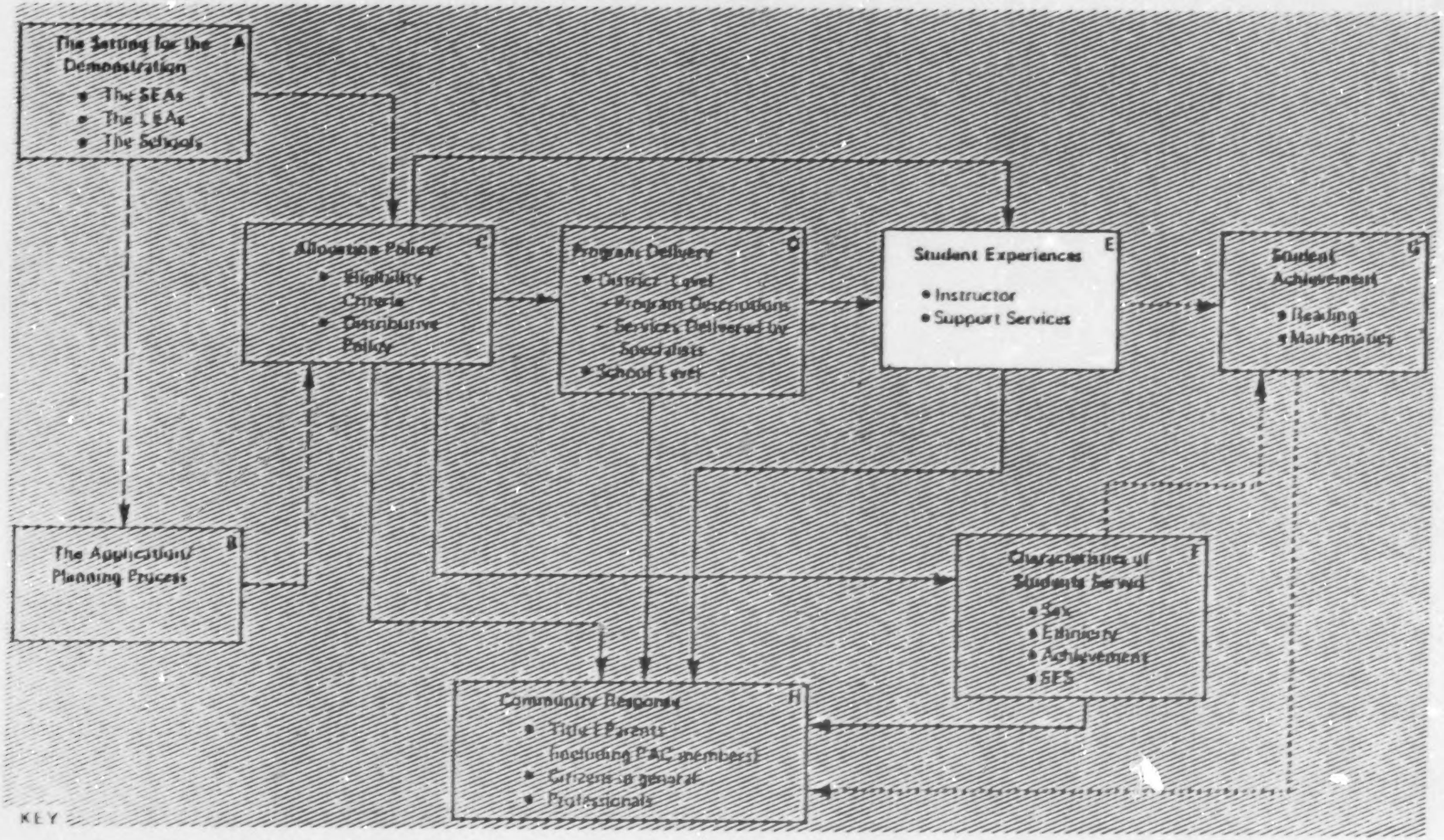
[4] All districts will be included in the design with two school types: currently Title I and Title I during the implementation years only. For those districts having a third school type--never Title I--the three-level design will also be used.

Chapter 8

STUDENT EXPERIENCES


The Setting for the Demonstration
A
• The SEAs
• The LEAs
• The Schools
Allocation Policy
C
• Eligibility Criteria
• Distributive Policy
Program Delivery
D
• District Level
- Program Descriptions
- Services Delivered by Specialists
• School Level
Student Experiences
E
• Instructor
• Support Services
Student Achievement
G
• Reading
• Mathematics
The Application/ Planning Process
B
Characteristics of Students Served
F
• Sex
• Ethnicity
• Achievement
• SES
Community Response
H
• Title I Parents (including PAC members)
• Citizens in general
• Professionals

KEY

- – – – – – Links to be analyzed conceptually
- ———— Links to be analyzed statistically for full range of districts
- · · · · · · · · Links to be analyzed statistically, where possible, for a subset of districts

8.0 STUDENT EXPERIENCES

8.1 Research Objectives

Student experiences comprise a key variable group in the basic analytic model for the Demonstration Study. Since the goals of Title I focus on students, an examination of their experiences is obviously a crucial component in analyzing the effects of Title I fund reallocation. The identification of student experiences as a separate variable group in the model emphasizes the distinction we wish to make between student experiences and program delivery.

There are two reasons for looking directly at the services received by students rather than inferring them from the descriptions of the programs in which they participate. First, in districts where a student may participate in more than one compensatory program, it would be difficult to estimate accurately the cumulative services delivered to the student from the combination of programs, since such a combination may or may not be additive. Second, program implementations need not correspond exactly with program designs. We are more interested in what students actually experience than in what is intended for them. In fact, the instruction which is delivered by teachers in basic and compensatory programs may be selectively received by students, so that a student's experience may differ not only from program intentions, but also from teacher activity.

As shown in the analytic model, changes in student experiences may result indirectly from a reorganization of the Title I program and redefinition of its content (Link DE in the model. Changes may also result from a shift in the amount of services received by each student, independent of a qualitative change in the program (Link CE in the model).

The basic research question to which this chapter is addressed is: What effect does the reallocation of Title I funds in a district have on the educational experiences of different types of students? In answering this question, educational experiences will be divided into instructional and support services, and regular instruction will be distinguished from compensatory. The various types of students will be categorized by the sample design and groups within the sample design. The former divides students by the Title I status of the schools they attend and their participation in Title I. For a subset of analyses, student characteristics such as ethnicity, sex, achievement level, and poverty status will be examined, individually and in combination, within the sampling groups. The effects of reallocation will be determined by comparing student experiences before the granting of waivers with student experiences during the implementation years of the Demonstration. These breakdowns provide a more precise statement of the basic research question as follows:

1. Do Title I students and non-Title I students in different types of schools receive different regular and compensatory services before the granting of the waivers and do the services change over time?
2. Do Title I and non-Title I students with different characteristics receive different services in different types of schools at one point in time and do the services change over time?

8.2 Sampling Design

The basic design for analyzing student experiences is the student sampling design presented in full in Section 3.3.2 and summarized in Section 7.2 on student characteristics. (See Table 8-1.) Essentially, this design allows us to

TABLE 8-1

BASIC STUDENT SAMPLING DESIGN

School Type	School Year											
	1975-76				1976-77				1977-78			
	Student Type				Student Type				Student Type			
	Students Rec'g Title I		Students Not Rec'g Title I*		Students Rec'g Title I		Students Not Rec'g Title I		Students Rec'g Title I		Students Not Rec'g Title I	
	Gr 3	Gr 4	Gr 3	Gr 4	Gr 3	Gr 4	Gr 3	Gr 4	Gr 3	Gr 4	Gr 3	Gr 4
Schools currently receiving Title I												
Schools receiving Title I during implementation years only	▨	▨										
Schools never receiving Title I services	▨	▨			▨	▨			▨	▨		

▨ These cells by definition cannot exist.

.AP . 2

SECONDARY DESIGN FOR

ANALYZING STUDENT EXPERIENCE

School Type	1975-76			1976-77			1977-78		
	Student Type			Student Type			Student Type		
	Students Rec'g Title I	Under-Achieving Students Not Rec'g Title I*	Achieving Students Not Rec'g Title I	Students Rec'g Title I	Under-Achieving Students Not Rec'g Title I	Achieving Students Not Rec'g Title I	Students Rec'g Title I	Under-Achieving Students Not Rec'g Title I	Achieving Students Not Rec'g Title I
	Gr 3 Gr 4	Gr 3 Gr 4	Gr 3 Gr 4	Gr 3 Gr 4	Gr 3 Gr 4	Gr 3 Gr 4	Gr 3 Gr 4	Gr 3 Gr 4	Gr 3 Gr 4
Schools currently receiving Title I									
Schools receiving Title I during implementation years only	▨								
Schools never receiving Title I services	▨			▨			▨		

NOTE: *Underachieving Students not receiving Title I are those students scoring at or below the 40th percentile on a standardized reading achievement test.

▨ These cells by definition cannot exist.

estimate services received by Title I and non-Title I students by grade level (3rd or 4th) and school type (schools receiving Title I all three years, schools receiving Title I funds during the implementation years only, and, where appropriate, schools never receiving Title I).

After the sample of students is drawn, the basic design components will be divided further on the basis of student characteristics, to the degree that the distributions of these characteristics yield an adequate sample size for each cell. (See Table 8-2.) The most important characteristic is achievement level. Title I students cannot be sorted on this dimension because their participation in Title I is premised on low achievement, but non-Title I students will be separated into underachieving and achieving groups where possible. Such a separation is especially valuable in year one, since it allows comparison of the experiences of Title I students with those of non-Title I students who are also in need of services and who may be served during the implementation years. Other characteristics such as poverty, ethnicity and sex will be used both individually and, if possible, in a multivariate analysis to further divide the student sample. In the multivariate case, we will use a discriminant function or similar analysis to identify the cluster of variables which best discriminates between Title I and non-Title I students in Title I schools. Then, where the distribution of variables allows, we will use the same clusters to separate students in non-Title I schools in order to compare the experiences of non-Title I students who are most like Title I students.

8.3 Variables and Data Sources

Variables on student experiences are grouped under two headings: instruction, which is defined as activities dealing directly with the teaching of students or with the interaction between teacher and students; and support services, which are defined as activities designed to assess and improve the well-being of students and to supplement the teaching process. This division seems natural because the two types of service differ in so many ways: in the types of people who deliver them, in the reasons for the services, and in their frequency and duration. With respect to instruction, the emphasis is on language arts and mathematics since these are the areas in which Title I programs are concentrated. Some coverage, however, is given to other content areas as well.

Most variables will be used to describe both regular and compensatory services. Regular refers to the basic program available to all children in a school district designed to develop necessary knowledge, skills, appreciations, attitudes, and behavioral characteristics. Compensatory refers to supplemental instruction and services provided for economically poor and/or low achieving children. Supplemental means different from, or in addition to, the usual instruction and services provided for the average child.

Although the focus of the Demonstration is on compensatory services, the role of compensatory education in a district can only be understood fully when examined in the context of the regular services provided by the district. Considering regular as well as compensatory services is important in a number of ways.

First, the examination of both regular and compensatory services facilitates a determination of whether changes in compensatory services are related to the Demonstration itself or to more general trends in education. If changes are found solely in the compensatory services received by students, then we have some reason to believe that the changes are associated with changes in Title I allocation or program policies. If, on the other hand, we find changes in both regular and compensatory services, then we may be reluctant to attribute these changes to the Demonstration, since they might have resulted from a more general change in educational strategies.

Second, a consideration of regular as well as compensatory services furthers our understanding of changes over time within the cells of Table 8-1. It is possible, for example, that during the implementation years of the Demonstration, Title I students in a given district may receive less compensatory instruction in reading than they had previously. At the same time, the amount of regular reading instruction provided in the basic program might increase. If we were to consider only the compensatory reading instruction received by Title I students in this district, we would reach the conclusion that such instruction had diminished over time. By looking at the total instructional program, we will be able to recognize that the reduction in compensatory reading instruction was offset at least in part by an increase in regular reading instruction for these students.

Third, knowledge of both the regular and compensatory services helps in interpreting changes in relationships across cells of the student sampling design, especially relationships between Title I and non-Title I student groups. Table 8-3 displays nine possible relationships between these groups. Cell 4 represents the normal or expected pattern for any one point in time: Title I and non-Title I students receive the same amount of regular instruction in the basic educational program and Title I students receive additional compensatory instruction beyond that. Cell 1, where the amounts of both regular and compensatory instruction received by Title I students exceed the instruction provided to non-Title I, also represents an expected pattern: Title I students receive special treatment

TABLE 8-3

POSSIBLE RELATIONSHIPS BETWEEN TITLE I AND NON-TITLE I STUDENTS IN THE REGULAR AND COMPENSATORY INSTRUCTION RECEIVED

	Compensatory Instruction		
Regular Instruction	Title I > Non-Title I	Title I = Non-Title I	Title I < Non-Title I
Title I > Non-Title I	1	2	3
Title I = Non-Title I	4	5	6
Title I < Non-Title I	7	8	9

in addition to that provided during the time formally labelled as compensatory. These relationships would not be difficult to interpret.

The other cells in both the first and the second rows, if they exist empirically with sufficient frequency, would require additional analyses to interpret because they diverge from the expected pattern of Title I/non-Title I differences in student experiences. While it would be possible for the compensatory instruction provided to non-Title I students to equal or to exceed that provided to Title I students (Cells 5 and 6)--if, for example, the district is a large one with many other compensatory programs--it would be unlikely since not all non-Title I students need compensatory services. Entries in the third row, where the Title I students' regular instruction is less than non-Title I students' regular instruction, are even more unlikely and would require a great deal of interpretation because on their face they do not meet Federal comparability requirements. These requirements provide that instructional services supported by state and local funds for children in Demonstration schools be comparable to those services received by children in non-Demonstration schools within districts. The Title I legislation further requires that Title I funds supplement rather than supplant funds available from state and local sources.

Thus, while student experiences are not equally likely to fall into any of the cells of the matrix, we must be aware of all possible combinations of relationships since different combinations call for widely differing interpretations of compensatory services provided to Title I students at any one point in time.

The matrix is also useful in tracing changes in those services during the Demonstration. If, for example, deconcentration results in Title I students receiving less compensatory instruction than before, but still more than non-Title I students, that decrease might be made up by an increase in their regular instruction, which results in their receiving more regular instruction than non-Title I students. Such a change might show up as a shift over time from Cell 4 to Cell 1.

Data on student experiences will be taken from three sources:

- Classroom Activities Log (CAL)
- Program Description Modules (PDM)
- Student School Record Information Form (SSIRF)

The first two instruments will be used primarily to measure instructional variables; the third support services. To a great extent, each data source provides complementary rather than overlapping information. Each was designed for a different purpose, so that even when similar areas are covered, the data provide a different perspective on those areas. The data from all three sources are linked to specific sample students and are provided by their teachers. Both of these factors increase our confidence that we are accurately describing services received by the sample students.

Table 8-4 summarizes the relationships between data sources and variable groups. The specific variables to be examined within each instrument are described below.

Table 8-4

MAJOR VARIABLE GROUPS BY DATA SOURCE*

Data Source	Variable Group				
	Language Arts/ Math		Other Content Areas		Support Services
	Comp.	Req.	Comp.	Req.	
CAL	X	X	X	X	
Program Modules	X	X			
SSRIF					X

---

*Table 8-4 shows only the primary use of data from each source. The CAL also contains a limited amount of information on support services and the SSRIF contains some information on ESL/Bilingual Instruction. These are secondary purposes for these instruments.

8.3.1 Classroom Activities Log (CAL)

Data from each CAL will provide a complete desciption of the experiences of a single student on a typical day. The form is completed by homeroom (primary) teachers of sample students. During the first year, each student will be observed on two randomly selected days. During the second year, observation will occur on three randomly selected days. The CAL provides data on five aspects of student experiences: content area of instruction, size of instructional grouping, person providing instruction, and whether instruction is compensatory or bilingual. Data are recorded in ten-minute intervals throughout the day. All analyses will be based on time spent in each category or combination of categories.

In delineating actual student experiences over the total instructional day, the CAL will provide a precise statement of student experiences and will facilitate direct comparison of regular and compensatory instruction for students in different cells. Geared to specific students, this instrument will contain data for the analysis of student experiences by student characteristics.

The first set of variables constructed from the CAL data will provide an overall description of the students' day. The variables include:

- Time spent in each content area.
- Time spent in compensatory and bilingual instruction.
- Instructional group size pattern.
- Staffing pattern.

Time spent in each content area and in compensatory and bilingual instruction are straightforward. The pattern of instructional group size can be used to determine whether one grouping predominates (e.g., 80% of the students' day is spent in a small group with 2 - 5 children), whether there are particular combinations of groupings, or whether a variety of groupings are used. Staffing patterns can be used to determine whether the classroom teacher gives most of the instruction or whether the child's instruction shifts among other classroom teachers and specialists. It also can be used to determine the extent to which paraprofessionals --aides and volunteers--and student teachers provide instruction to the sample student.

The second set of variables will focus on regular and compensatory language arts and mathematics instruction which the students receive. For each of these subjects we will look at:

- Instructional group size
- Staffing pattern

From these two variables, we will obtain information on the instructional group size and the person providing instruction in compensatory language arts, regular language arts, compensatory mathematics and regular mathematics.

Additional constructs will be developed by clustering variables or developing scales with several categories to provide policy relevant summary findings which distinguish among student groups. To a great extent these constructs will result from explorations of the data themselves, and will depend on the reliability and variability of the dimensions, as well as on the patterns revealed by early analysis. Examples of such constructs might be an index of individualization of assignment patterns using data from the group size variable or an index of adult-child interaction using data from the group size and adult-involved variables.

8.3.2 Program Description Modules

The CAL gives a view of the total instructional day and provides precise information on the amount of instruction, the size of the instructional group, and the people providing instruction. The Program Modules more fully examine the language arts and mathematics instruction, both regular and compensatory, provided to sample students in the Demonstration districts. The intention is to learn more about how the instruction is provided. These two subject areas were chosen because they are the areas in which most Title I effort is concentrated.

Since we are interested in student experiences, the primary referent for the Modules is the sample students. In order to obtain information about the individualization of instruction, it is necessary to ask about these students in relation to others. For this reason the modules are linked to sample students but also relate these students to specified others, e.g., the group in which the sample children receive their compensatory instruction in language arts on a typical day.[1] The modules are filled out by the people who provide instruction in these subjects to the sample children.

Variables from the Program Description Modules fall into two categories:

Setting of instruction

- Person who provides instruction
- Location of instruction[2]
- Number of children meeting together

---

[1] The exact reference group varies depending on whether we are asking about regular or compensatory instruction, and whether students are grouped heterogeneously by Title I. It is assumed with only Title I or only non-Title I students that the reference group is a single unit--the entire class receiving instruction at the same time. In regular programs where both Title I and non-Title I students are grouped together for instruction, two reference groups are assumed: other Title I and non-Title I students.

[2] Only for compensatory instruction.

- Heterogeneity of grouping with respect to Title I[3]
- Amount of instruction per week
- Length of time in program

Strategies for instruction

- Detail of teacher's lesson plans
- Means of assessing children's performance at the beginning of the year
- Existence of performance objectives
- Basis for assigning lessons
- Instructional groupings
- Use of materials
- Means of assessing children's progress
- Extent of individualization

The same set of variables will be used to describe language arts and mathematics instruction in both the regular and compensatory programs (with the exception of the footnoted variables). All variables, except the extent of individualization, will be drawn directly from the questionnaire items. The individualization variable(s) will be developed through a combination of judgmental and empirical scale construction, with items pertinent to the scale selected judgmentally. The homogeneity of this scale will be assessed using cluster and/or factor analytic techniques. Finally, item weights will be assigned, the scale scored, and internal consistency assessed using coefficient ALPHA.

8.3.3 Student School Record Information Form

The SSRIF elicits information about services received by a sample student throughout the school year. A separate form will be completed for each sample student. The SSRIF is the only data source which will be used in describing support services received by sample students and in analyzing program activities by funding source. It also provides data on a limited set of instructional variables in a form not recorded elsewhere. The variables will be drawn directly from the questionnaire items.

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[3] Only for regular instruction.

Instructional Variables

- Receipt of bilingual or English-as-a-second language instruction and extent of that instruction
- Number of field trips taken

Support Services Variables[4]

- Type of service and number of times received
- Type of specialist and number of times seen
- Reason for seeing specialists

Program Activities by Funding Source Variables

- Compensatory reading instruction
- Counseling
- Other services by
- Title I funding
- Other Federal funding
- State Compensatory funding
- Local funding

---

[4] Information on support services is also obtained on the CAL. Although this information is essential to fully describe the instructional day, one cannot use a single day to estimate the frequency and nature of a relatively rare event, as support services are.

8.4 Analytic Procedures

8.4.1 Descriptive

The first step of the analysis will be to compute descriptive statistics for all variables--for each cell, for each district, and for the total demonstration. Means and standard deviations will be computed for continuous variables and frequency distributions for categorical variables. These analyses will be presented in the same form as the analyses for student characteristics (Table 7-4). For some of the CAL analyses, we will also want to look at crosstabs for combinations of variables.

8.4.2 Comparative

Comparative analyses of student experiences will be performed with two designs, the basic student sampling design and the sampling design with additional student characteristics.

The strategy chosen for testing for significant differences will depend on the nature of the response scale of the variable being analyzed. If the response scale is categorical, a Chi-square approach will be used. If the response scale is continuous, ordered, or dichotomous, a modification of the usual analysis of variance approach will be used. For the basic design, the analyses will include four factors: district ($\leq$ sixteen levels), school type (two or three levels[5] based on allocation policy), student Title I participation (two levels), and grade (two levels). One of the factors, student Title I participation, is not completely crossed with type of school, there being by definition no Title I students in non-Title I schools. In this situation, regression methods will be used since the standard computational methods for crossed designs do not apply. The choice of the regression approach means that the effects of interest must be explicitly coded in the analysis. The codes indicate the value assigned to each level of the factors to be entered in an equation. Explicit coding methods not only solve the problem of an imbalanced design, but also have the advantage of reflecting the comparison being made directly in the coding scheme. This obviates the need for post-hoc comparisons.

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[5] All districts will be included in the design with two school types: currently Title I and Title I during the implementation years only. For those districts having a third school type--never Title I--the three-level design will also be used.

The development of a coding scheme can be illustrated by examining a likely set of comparisons for analyses of student experiences in the secondary design which was presented in Table 8-2. In the development of the coding scheme, only the unbalanced portion of the design will be considered. Since grade and district are assumed to be balanced across the cells in the table, coding their effects is straightforward. We return to this at the end of the section.

Since the imbalance in the design changes between the 1975-76 and 1976-77 school years, the coding schemes will differ slightly for those years. We will start by developing a coding scheme for the 1975-76 data and modify it to fit the later years. In developing the various coding schemes, it is desirable to make the comparisons as similar as possible across the three years. This will aid in interpretation and allow for integration of the comparisons into a change analysis in later sections.

The 1975-76 data cells may be laid out as rows in a coding table. This is done in Table 8-5 below, along with two sets of codes.

TABLE 8-5

CODING SCHEMES FOR FIRST YEAR ANALYSIS IN SECONDARY STUDENT EXPERIENCE DESIGN

Design Variables		Coding Schemes							
		Primary Codes						Alternative Codes	
School Type	Student Type	I	II	III	IV	V	VI	V′	VI′
Currently Title I	Title I	0	0	0	0	-3	-3	-6	0
	Lo Ach	1	1	0	0	1	-3	1	-1
	Hi Ach	0	0	1	1	0	4	1	1
Title I during the implementation years only	Lo Ach	0	-2	0	0	1	-3	1	-1
	Hi Ach	0	0	0	-2	0	4	1	1
Never Title I	Lo Ach	-1	-1	0	0	1	-3	1	-1
	Hi Ach	0	0	-1	1	0	4	1	1

In the development of the coding scheme, we first try to establish the variation among the school types at any particular student level. Once this variation is assessed, the student types are compared. In Table 8-5, columns I and II compare the three school types within the low-achieving non-Title I students. Column I compares always Title I and never Title I schools, while Column II represents a comparison of the implementing schools with the other two. A similar comparison of schools is represented in Columns III and IV for high-achieving students. These four comparisons represent the variation among school types comprising available data. Column V represents a comparison of Title I students with low-achieving students, who might be considered a relevant comparison group given the policy interests of the study. The final comparison (VI) is between high achievers and a combination of Title I and low achievers.

The nature of the comparisons is indicated by the pattern of signs in the columns. Column I, for instance, indicates a comparison between low achievers in schools which always have Title I and which never have Title I. The numbers in the table make the various components independent (orthogonal). This is advantageous for computational and interpretive purposes. Since the columns are orthogonal, the comparisons may be assessed independently, given that the overall design is balanced with respect to these seven cells.

No single set of codes is determined. They are generated principally on the basis of comparisons of interest, with constraints imposed by the orthogonality requirements. Thus, alternative coding schemes are possible. One such alternative is given in the last two columns of the table. We assume that the first four columns are still of interest. However, rather than compare Title I students with low achievers it might be better to compare them with all other students. This is done by Column V′ which replaces column V in the coding scheme. The remaining comparison is then a comparison of low achievers and high achievers. This is represented by Column VI′ which replaces Column VI in the coding scheme.

Since the data for 1976-77 and 1977-78 have the same pattern as for 1975-76 except for one extra cell, the same coding scheme may be used. An extra row must be included for the "new" group and a new comparison (column) must be generated. This results in Table 8-6.

TABLE 8-6

CODING SCHEMES FOR SECOND AND THIRD YEAR ANALYSIS IN SECONDARY STUDENT EXPERIENCE DESIGN

Design Variables		Coding Schemes											
		Primary Codes							Alternative Codes				
School Type	Student Type	I	II	III	IV	V	VI	VII	V′	VI′	V″	VI″	VII″
Currently Title I	Title I	0	0	0	0	-3	-3	1	-6	0	1	0	-3
	Lo Ach	1	1	0	0	1	-3	1	1	1	0	1	1
	Hi Ach	0	0	1	1	0	4	1	1	-1	0	-1	1
Title I during the implementation years only	Title I	0	0	0	0	0	0	-7	0	0	-1	0	-3
	Lo Ach	0	-2	0	0	1	-3	1	1	1	0	1	1
	Hi Ach	0	0	0	2	0	4	1	1	-1	0	-1	1
Never Title I	Lo Ach	-1	1	0	0	1	-3	1	1	1	0	1	1
	Hi Ach	0	0	-1	1	0	4	1	1	-1	0	-1	1

The comparisons are the same as for the previous table except for Column VII which compares the new group with all other groups. Again columns V' and VI' may replace columns V and VI in the coding scheme.

The comparisons indicated by Column VII may be somewhat problematic, since the Tilte I group is compared with a mixture of Title I and other groups. It may be of greater interest to compare all Title I groups with other groups and to compare the two Title I groups with each other. These comparisons are coded in columns V" and VI" of Table 8-6 If they are to be used, all three columns (V, VI, VII) must be replaced by new codes (V", VI", VII").

As mentioned previously, variables which balance with respect to the school type x student type design are coded in a straightforward manner. A set of codes is developed for the main effect of the new variable and interaction codes are developed through direct multiplication. As an illustration, consider the inclusion of grade in the design.

Since there are two grades they may be coded 1, -1. The table may be laid out as follows:

TABLE 8-7

CODING SCHEME FOR BALANCED PORTIONS OF THE DESIGN

Design Variables[a]		Coding Scheme					
School Type	Pupil Type	Grade	G	I	II	GxI	GxII
Currently Title I	Title I	3	1	0	0	0	0
		4	-1	0	0	0	0
	Lo Ach	3	1	1	1	1	1
		4	-1	1	1	-1	-1
	Hi Ach	3	1	0	0	0	0
		4	-1	0	0	0	0
Title I during the implementation years only	Lo Ach	3	1	0	-2	0	-2
		4	-1	0	-2	0	2
	Hi Ach	3	1	0	0	0	0
		4	-1	0	0	0	0
Never Title I	Lo Ach	3	1	-1	1	-1	1
		4	-1	-1	1	1	-1
	Hi Ach	3	1	0	0	0	0
		4	-1	0	0	0	0

Column G represents the effect of grade. Third grade students are coded 1 and fourth grade students, -1. Columns I and II are taken from the original scheme for 1975-76 (Table 8-5). Each row is duplicated to account for the "splitting" of the cells. Columns GxI, GxII represent interactions of grade with the previous comparisons. Thus GxI is an estimate of the interaction of grade with the school type differences in low achievers. The codes are obtained by multiplying corresponding codes in the two columns representing the interacting variables. Thus, for GxI, row 1, we get 1 x 0 = 0, for row 3, 1 x 1 = 1, etc. The remainder of the table is omitted since codes are computed in the same manner and need not be presented for this illustration.

Student characteristics may be entered into the design in the same manner as design variables if they are qualitative. Thus, for example, sex may be coded 1, -1 and included in the same manner as grade level. Continuous variates, (for example, SES), simply take on the value of the scale in question. With characteristics other than achievement level, interaction terms will not be routinely generated in the coding scheme. It is preferrable to check the differences in the regression among the groups beforehand, either theoretically on the basis of what is known about the variable or empirically by computing regressions for each group separately and comparing them, and to only code the interactions of interest.

8.4.3 Analysis of Change

The analysis of change across the three years follows the same form as the comparative analysis. In laying out the coding scheme we note that six cells are common to the three time samples. These are the cells resulting from a combination of school type and the two pupil types which do not receive Title I (TI) services. Thus there is a crossed design with the factors time (75-76, 76-77, 77-78), school type (TI all years, TI implemented 76-77, no TI), and pupil type (low achieving non-TI, high achieving non-TI). This eighteen cell design allows computation of main effects and all interactions of these factors. These can be computed using standard methods. However, it is useful to use the coding method both to provide tests of specific hypotheses and to allow for the inclusion of the remaining (TI) students in the analysis.

In one likely coding scheme for the analysis, the first seventeen comparisons correspond to the analysis of the eighteen cells in the "crossed" part of the design. They are detailed as follows:

I. Comparison of pre-implementation with post implementation years (for non-TI students).

II. Comparison of the two implementation years (for non-TI students).

III. Comparison (for low achievers) of schools which have always had TI with those which have never had TI.

IV. Comparison (for low achievers) of implementation schools with others.

V. Same as III for high achievers.

VI. Same as IV for high achievers.

VII. Comparison of high achievers and low achievers.

The next ten comparisons represent interactions:

VIII. I x III

IX. I x IV

X. I x V

XI. I x VI

XII. II x III

XIII. II x IV

XIV. II x V

XV. II x VI

XVI. II x VI

XVII. II x VII

These are interpreted by referring to the components. For instance, comparison VIII represents an interaction of the pre-post implementation comparison and the always-never TI comparison. Thus, it gives an indication of the difference in pre-post changes in always TI as opposed to never TI schools. Alternatively, it could be interpreted as an indication of the change in the difference between the two types of schools over time.

Given these comparisons the remaining analyses relate to the five TI groups. These are laid out as follows:

A. Comparison of pre-implementation with post implementation years for TI students in schools which have always had TI.

B. Comparison of two implementation years for TI students in schools which have always had TI.

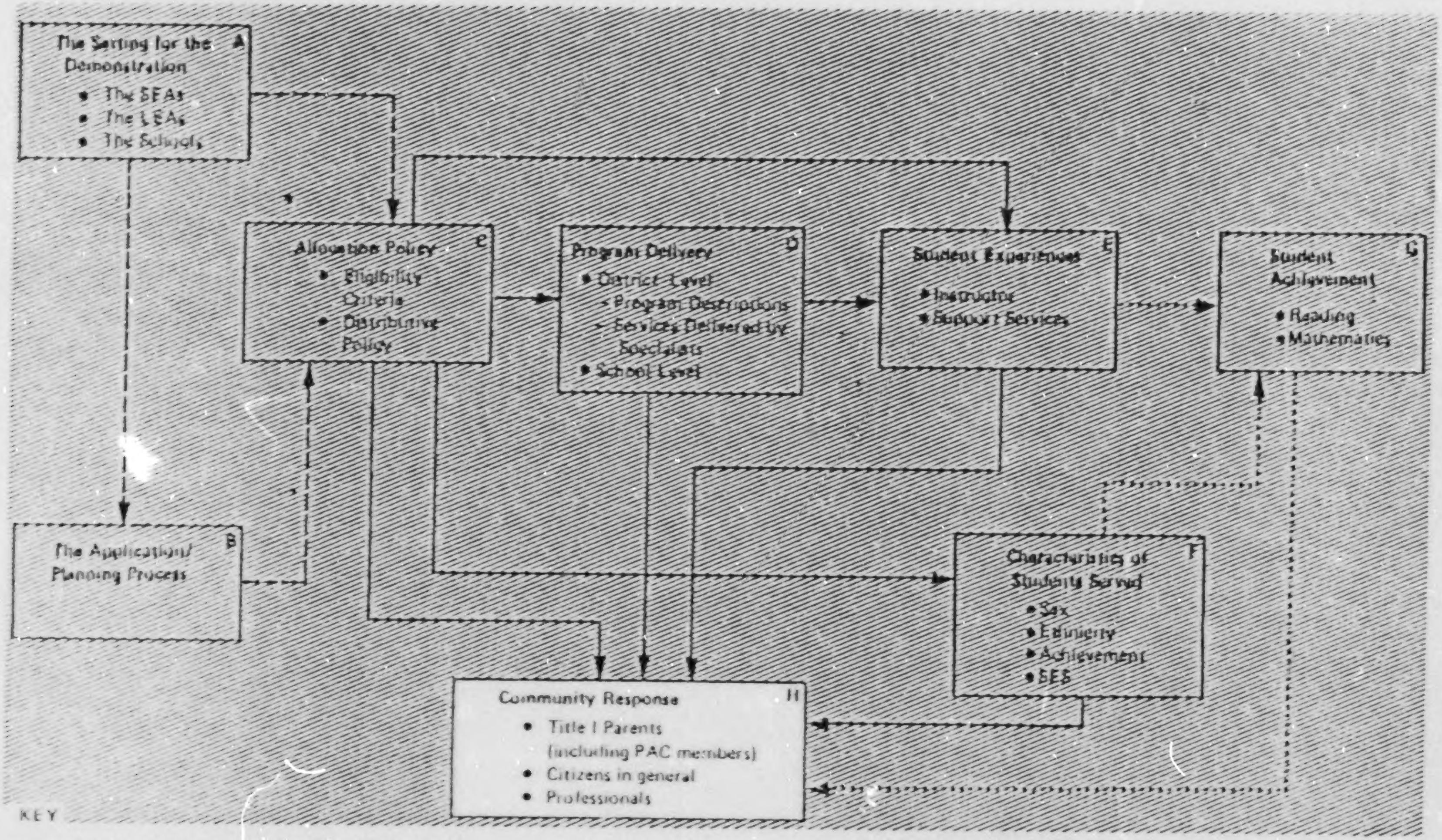
C. Comparison of two implementation years for "new" TI students.

D. Comparison of TI students in schools which have always had TI with "new" TI students.

E. Overall difference between TI and non-TI.

Chapter 9

COMMUNITY RESPONSE


The Setting for the Demonstration A
• The SEAs
• The LEAs
• The Schools
Allocation Policy C
• Eligibility Criteria
• Distributive Policy
Program Delivery D
• District Level
- Program Descriptions
- Services Delivered by Specialists
• School Level
Student Experiences E
• Instruction
• Support Services
Student Achievement G
• Reading
• Mathematics
The Application/ Planning Process B
Characteristics of Students Served F
• Sex
• Ethnicity
• Achievement
• SES
Community Response H
• Title I Parents (including PAC members)
• Citizens in general
• Professionals

KEY

– – – – – Links to be analyzed conceptually

———— Links to be analyzed statistically for full range of districts

·········· Links to be analyzed statistically, where possible, for a subset of districts

9.0 COMMUNITY RESPONSE

Since the school is an entity firmly embedded in a community, the existence of viable community involvement is an element essential to educational efforts. Compensatory education efforts in particular require the involvement of community members because these efforts ultimately reflect the major community problems associated with economic and technological change. Thus, an examination of community members, their knowledge and participation in such programs, is an essential component of this research.

This chapter discusses community response to the Demonstration, represented by variable group H in the analytic model. Data for the analysis of community response will be gathered from three sources:

- face-to-face interviews with parents of children receiving compensatory service under Title I;
- face-to-face interviews with members of the Parent Advisory Councils (PACs); and
- a telephone survey conducted with a randomly selected sample of citizens living in each school district.

The Parent Interview is designed to meet a variety of information needs. Chief among these is to obtain accurate estimates of family characteristics of pupils receiving Title I, since the family characteristics of the students being served may change markedly as districts implement new allocation criteria. (See Chapter 7 for a discussion of this use of the Parent Interview.) Changes in program services and the students served may also affect the perceptions of parents regarding these services. Since such information may be crucial in understanding obstacles to or support for policy changes, the interview will gather information reflecting parental awareness of, participation in, and evaluation of school programs and activities.

The Parent Advisory Council Interview is designed to obtain information on the characteristics of parents who participate in PACs and the types of activities in which PACs engage. The interview will also gather information on the concerns of these parents regarding the programs and policies being tested in the Demonstration projects. It will be a partially structured, partially open-ended interview.

The Citizens' Telephone Survey is designed to assess the reaction of local citizens who are not directly connected with the school system to changes in the program. This information will be obtained through a brief telephone interview with a randomly selected group of citizens. The changes associated with the Demonstration projects will be assessed in terms of community awareness and reaction.

The analyses proposed for the study of community response are somewhat constrained by the measurement instruments. The instruments, designed to meet the information needs of the study, enable us to ask only broad generic questions of a complex series of behaviors. To this extent there are limitations upon the precision of the analytic methods which can be employed and limitations upon the depth to which the research questions can be answered.

The analyses proposed, however, are designed to provide the necessary information for policy considerations. First, a descriptive analysis of the information contained in the interviews will provide an overview of parents' and citizens' awareness, preferences, and evaluations of the Title I program and the Demonstration options. These data and their interpretations will provide policy relevant discussions of community response. Second, our basic concern will be to identify variations among districts on community response and to identify those factors in the actions taken by the districts which can explain the variation in community response. From this analysis we can describe the patterns of community response, identify those factors which seem to be associated with differing responses within districts, and specify those conditions which explain variations in community response patterns among districts.

The remainder of this chapter will summarize the research questions, models, variables, and analytic procedures associated with each of the interviews.

9.1 Parent Response

9.1.1 Research Questions

Data from the Parent Interview will be used to answer the following research questions:

- What are the characteristics of families served by Title I programs?
    - -- Are there differences among Demonstration districts?
    - -- Are there differences among schools within districts?
- Are parents aware of the Title I program?
    - -- Does this awareness differ by district?
    - -- Does this awareness differ by schools within districts?
    - -- Does this awareness differ by family socio-economic characteristics?
    - -- Is this awareness related to parental involvement in schools?
- How do parents evaluate Title I services?
    - -- Does this evaluation differ by district?
    - -- Does this evaluation differ by schools within districts?
    - -- Does this evaluation differ by type of family?
    - -- Is this evaluation related to parental involvement in schools?

- What are the perceived needs and goals of the Title I program according to parents?
  - -- Do these needs and goals differ by district?
  - -- Do these needs and goals vary by schools within districts?
- Are there identifiable patterns of organizational or procedural activity which differentiate school districts or schools on parent perceptions, awareness, and evaluations?

9.1.2 Research Models

Two models for the analysis of the parent data are presented in this section. The models reflect the limitations of the data collection instrument but reflect also the relationships which can be examined to produce policy-relevant findings.

The first model (Figure 9-1) shows the simple set of relationships which result from policy and actions of the school district as it currently administers Title I. The second model (Figure 9-2) adds the socio-economic status of parents to the analysis. This addition is especially important since we expect that one effect of Demonstration implementation will be to alter the socio-economic composition of the population being served. The socio-economic status of parents is also useful for cross-sectional within-year analysis of parental response because school districts are selective in their communication with parents and vice versa. To some extent, such selective communication may be a function of family socio-economic status (SES).

As the second model indicates, we expect that parental response will be influenced by factors which are characteristic of the individual or family (i.e., parental SES and participation) and by factors which are characteristic of the school district (i.e., policies and procedures). In turn, the participation of parents is affected by their socio-economic status, and by the efforts of the schools and the school district to

FIGURE 9-1

BASIC MODEL FOR THE ANALYSIS OF PARENTAL RESPONSE

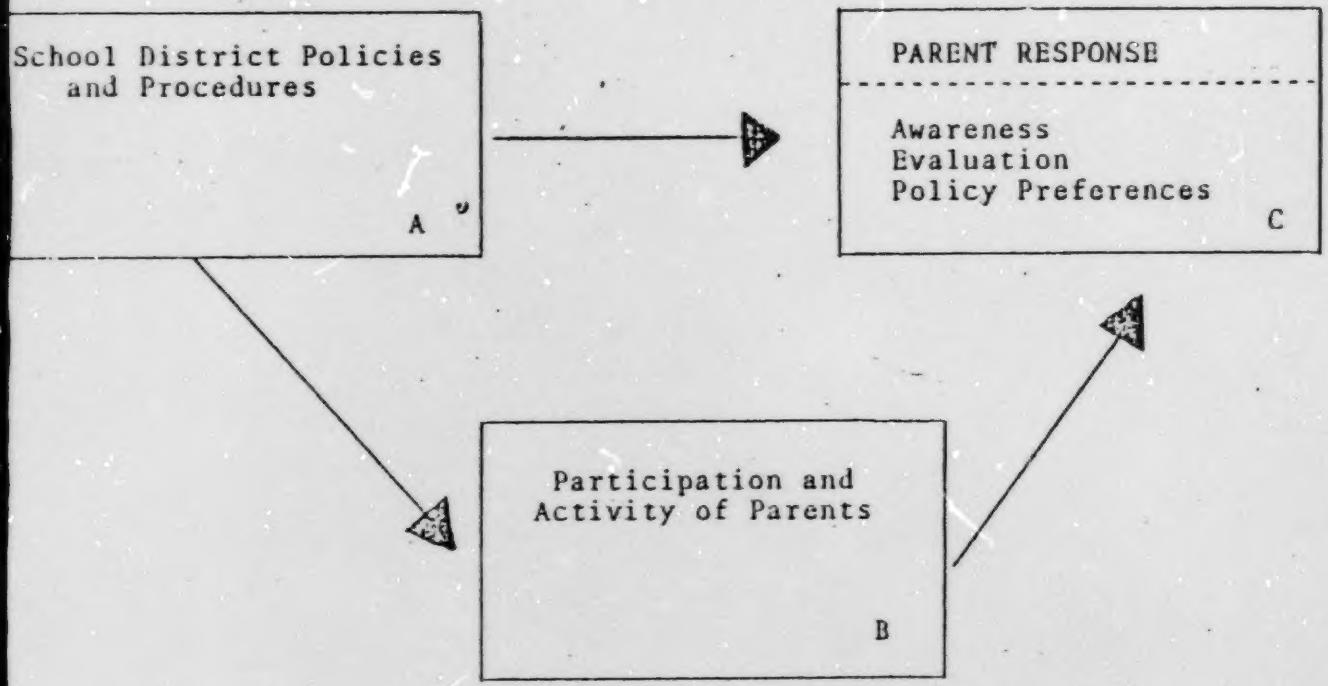
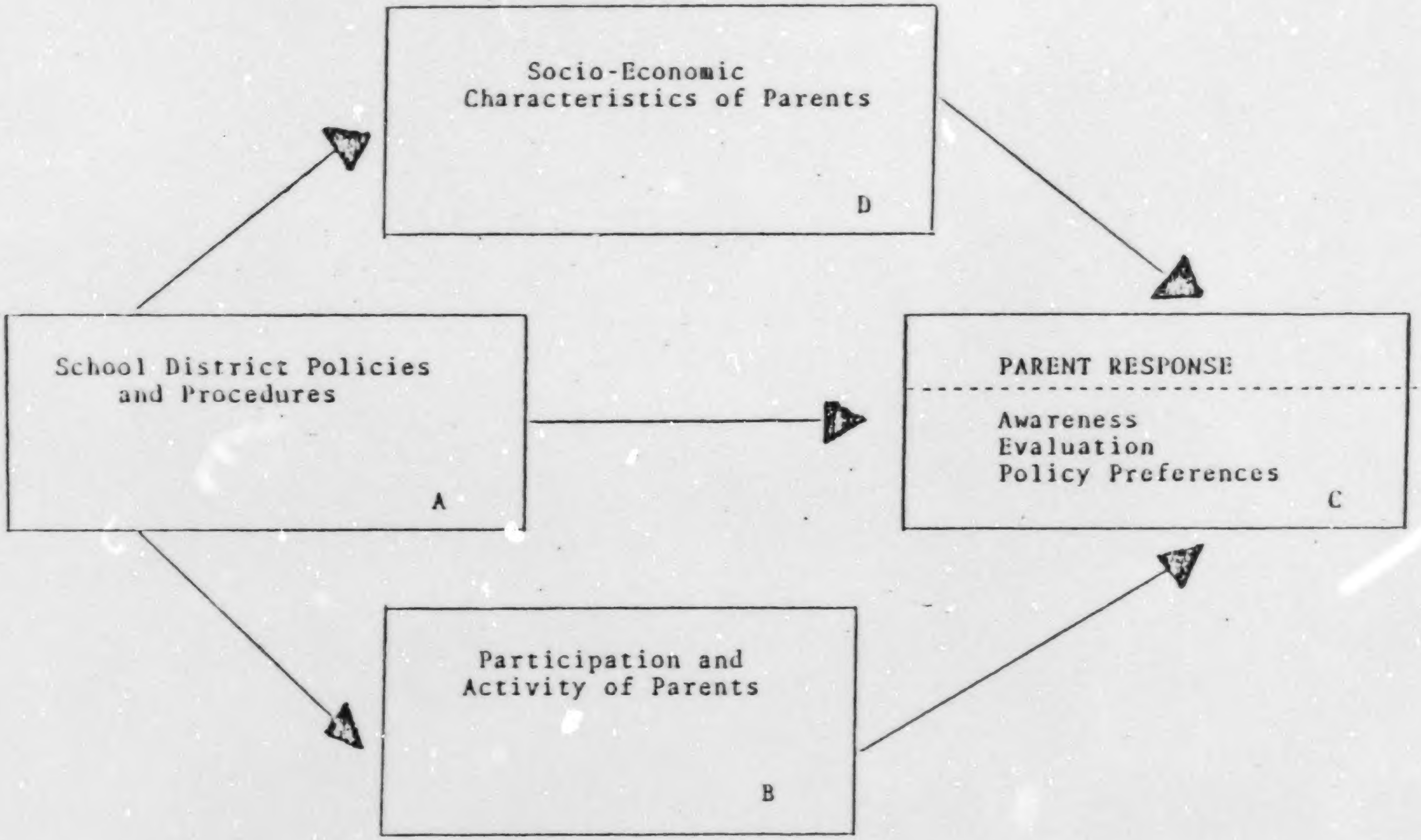

School District Policies
and Procedures
A
PARENT RESPONSE
Awareness
Evaluation
Policy Preferences
C
Participation and
Activity of Parents
B

FIGURE 9-2

SECONDARY MODEL FOR THE ANALYSIS OF PARENTAL RESPONSE


Socio-Economic Characteristics of Parents
D
School District Policies and Procedures
A
PARENT RESPONSE
Awareness
Evaluation
Policy Preferences
C
Participation and Activity of Parents
B

encourage parental participation in school activities. Therefore, while we expect the response of parents to be related to familial characteristics, we expect this relationship to interact with school district actions. Since the primary policy focus is on the actions of school districts, this factor assumes primary importance in the correlational linkage in the model.

9.1.3 Variables

Characteristics of Families Receiving Title I Services

Presentation of data on family characteristics will provide a picture of the families of children receiving Title I services. Changes in the characteristics of the families will provide policy-relevant information on the effects of changes in the administration of Title I. These characteristics include the following variables:

- Employment status
- Educational attainment of father and/or mother
- Family income
- Geographic mobility
- Race
- Spanish speaking
- Non-English speaking

Parental Perception of Special Services Received by Children

The variables listed below will provide a basis for the analysis of the extent to which parents perceive their children as receiving special services in the schools. Since all of the respondents will have children receiving services, the distribution of their responses will give an indication of the extent of the knowledge parents have of the existance and utilization of Title I. Changes in the distribution of awareness will document the influence of changes initiated by the Title I administration.

- Services provided for child (past and present)
  - -- Reading
  - -- Math
  - -- Counseling
  - -- Language
  - -- Smaller classrooms
- Awareness of existence of special services
- Awareness of Title I funding for services
- Enrollment of other children in special services

Parental Knowledge of Special Services Program

A further indication of the extent and depth of parental awareness is knowledge of Title I eligibility criteria and operations. This, in turn, will provide a baseline for the measurement of awareness of changes as a result of programmatic shifts. Variables included here are these:

- Knowledge of federally funded compensatory programs
- Knowledge of Title I
- Knowledge of funding of Title I
- Knowledge of Title I selection process

Community Information Sources

Parents may receive their information concerning Title I activities and programs from several different sources. These different sources reflect the effort of the school system to disseminate information to parents. The sources we will examine include:

- Information in mass media
- Discussion among friends, neighbors, relatives
- Information from schools

Parental Participation in School Activities

Parents may be more or less informed depending upon their participation in school activities. Variables of concern here are the following:

- Attendance at parent meetings, including
  - -- District-wide PTA/PTO, or PAC meetings
  - -- School PTA or PAC meetings
  - -- Other meetings
- Membership in parent organizations, including
  - -- District-wide PTA/PTO, or PAC organizations
  - -- School PTA or PAC organizations
  - -- Other organizations interested in schools
- Whether or not parents hold offices in parent organizations, such as
  - -- District-wide PTA/PTO, or PAC organizations
  - -- School PTA or PAC organizations
  - -- Other organizations interested in schools
- Frequency of visits to school
  - -- To talk with staff
  - -- To observe
  - -- To serve as volunteers
  - -- To attend training classes
- Whether or not parent works as an aide in the classroom

Parental Preferences

Finally, the parent interview will gather information on compensatory education goal preferences and preferences for Demonstration policy options. The preference choices of parents in terms of compensatory education goals are the following:

- Improving students' academic achievement
- Improving students' self-concept (self-image)
- Improving students' attitudes towards school
- Improving teaching performance
- Improving the school building or teaching equipment
- Involving parents more
- Improving education in general ways (not specific)

The preference choices for Demonstration policy options are:

- Concentration of special education services in schools which serve a large number of students which need such services;
- Distribution of special services to all children who need them, rather than only to poor students who need them;
- The use of achievement test scores as a measure of a student's accomplishments and need of special services.

Items within each group will be intercorrelated and submitted to a principal components analysis. A summary indices of preferred goals and preferred Demonstration policy options will be developed. The resulting summary indices will be intercorrelated as well.

9.1.4 Analytic Techniques

Descriptive Analysis

In order to present a context that provides policy-relevant information, data will be presented in simple description form. Means and standard deviations will be provided by districts for all continuous variables, and frequency distributions for categorical variables. Since a previous analysis (See Section 4.0 and 5.0) will have formed a typology of district characteristics descriptive data may be presented by district type, as well.

Selected variables will also be crosstabulated. Family characteristics will be the primary variable against which other variable sets will be arrayed. For example, districts will be compared in terms of the proportion of poor families who know about Title I. To facilitate the crosstabulations and to provide an initial estimate of variation, an index of socio-economic status, based on education and occupation will be developed.

Analyses of Relationships

As stated above, the primary policy-based relationship to be investigated is that between parental responses and the policies and procedures of the schools and school districts. The characteristics of the school districts include: school district organization and legal structure; planning year activities; and implementation proposals and activities. As discussed in Chapter 4, these factors will be utilized in the development of typologies of school districts. Parental response variables include those which relate to parental awareness, participation, access to information about Title I, and preferences for compensatory services and Demonstration policy options. Parental response patterns will be related to district typologies to see if there is a significant variation in the response patterns by districts. A further analysis will attempt to establish those factors or activities which lead to variations in response patterns.

Prior to performing these analyses, a number of data reduction techniques will be employed. We have already discussed one such technique: use of principal components analysis to develop parental preference variables. Others are described here.

Two variable sets may be combined to create a "parental awareness index": parental perceptions of special services received by children and parental knowledge of special service programs. This "awareness index" will reflect the degree to which each family is aware of three major issues delineated above: services provided for their child(ren); existence of special services; and awareness of Title I funding. It is probably best, with this level of data, that an artificial index be created such that a value can be placed upon various combinations of awareness. For example, a score of 1 could be given for each positive awareness response; a score of 0 for each negative awareness response. Simple addition would provide an index. The exact nature of the index to be constructed will have to be considered after the distribution and the intercorrelation of the data are examined.

Another variable to be developed is a "parental access to information index." This variable will be constructed from the community information sources variables. To the extent that parents have affirmed receiving information from various sources, we would expect this to be a reflection of the school systems' attempts to inform the community about the special services program. Since there is no obvious reason, at this moment, to place a higher value upon one source of information over another, we expect to create an index of information by a simple addition of the number of sources mentioned by the respondent.

Finally, a "parental participation index" will be developed using principal components analysis and/or other approaches as the response distributions permit.

The analysis of the relationships among the four variable groups has several components. The initial analyses consist of characterization of the sixteen school districts using participation and activities on the one hand and socio-economic variables on the other. Using constructed indices and other continuous variates, the analysis will take the form of a simple one-way analysis of variance with district as the independent variate. A more informative analysis is possible if the school districts can be grouped into smaller sets based on policy and procedure variables. This grouping, however, depends on the results of analysis of policy and procedure, and cannot be anticipated at this time. Given that such grouping is possible, the analysis has the form of a nested design with school districts nested within some broader categories.

The second stage of the analysis attempts to explain variation in parent response in terms of the other three groups. In general this will consist of an analysis of covariance with school district and/or policy categories forming the basic grouping and socio-economic and participation variables as covariates. It is noted that this use of ANCOVA varies somewhat from normal usage in that the covariates will not be used as "adjusting" variables but as predictors in and of themselves. With this aim in mind, it becomes necessary to examine the effects of SES and participation on parent response for each school district separately. This allows for an examination of the comparability of effects across districts and implicitly gives and indication of the interaction of district, SES, and participation in predicting parent response. With reasonable similarity of these effects across the districts, the overall covariance analysis will be performed. Otherwise, the separate district analysis will form the basis for interpretation.

Generally, these within-district analyses will take the form of regression analysis using standard methods. If the predictor variables are qualitative an ANOVA type analysis results.

9.2 PAC Response

9.2.1 Research Questions

Communities formally participate in Title I programs through the vehicle of Parent Advisory Councils (PACs). This is a requirement of Title I legislation. Parents of children in Title I programs from each school are to be chosen to sit on the Council. How parent members are chosen, their level of participation, and their knowledge of program content are all factors which can provide measures of differences among school districts as well as afford another indicator of potential success or failure of specific projects.

The purpose of the PAC interview is to provide a descriptive analysis of the role of the Parent Advisory Councils within each of the sixteen school districts. Two broad areas will be included: the participation activities themselves and the organizational relationships of the Councils to the school and its program.

The research questions with respect to participation activities are these:

- In what ways do PAC members involve themselves in compensatory education in the schools or districts?
- What types of activities do they tend to engage in the most?
- What kinds of issues do PAC members perceive as important for training?
- Who participates in meetings and training? What kinds of issues do participants discuss?
- At what school level is the participation?

Central to these issues is PAC members' percention of the effectiveness of their participation, which is closely related to their role in the organizational structure of the school district.

Organizational relationships are defined as the participatory roles that PACs have in the overall structure of the school and program decision-making matrix. The issues here concern the degree to which PACs are only advisory or have specific policy-making roles. Addressed are such questions as:

- How closely do administrators of programs work with PAC members?
- How are PAC members chosen?
- Who makes up the PAC membership?
- Do they have other roles in the system?

Both of the areas provide additional information on community responsiveness and program delivery, since the role of the PAC can be that of information disseminators and program implementers.

9.2.2 Data Sources

We will interview approximately ten PAC members in each district. The selection of this sample will be tailored to each district. The samples will be representative of the officers and most active members of the district-wide PAC and of a range of schools in the district. Interviews will consist of two parts. The first part will be a structured formal interview. This will provide standardized information across the sixteen districts that will be comparable to that collected in the nationally representative sample in District Survey I. The second part will be open-ended and conversational. It will involve a discussion of the planning year activities and the PAC's involvement in that process.

In the first part, items will be structured for the most part, but a few open-ended items will allow for elaboration where the quality of responses would be overly constrained by the close-ended format. This part will provide most of the data on participation activities, including:

- Involvement of parents in classroom activities
- Involvement of parents in policy-making meetings which affect program delivery
- Organization of activities outside of specific school programs
- Organization of other activities which contribute to or enhance the involvement of other of other community members

The second part of the interview is designed for elaboration and clarification of items introduced in the first part. It allows for more respondent opinion and reaction in particular areas. Furthermore, it is the primary data gathering instrument for perceptions of organizational relationships. Although information from school district administrators will be used to describe the organizational relationship of the PAC to the rest of the program, it is important to ascertain the PAC member's perception and definition of that relationship. Finally, the instrument probes with regard to the planning year. We hope to use the implementation plan of the schools to focus the latter part of the interview. From this information, we can describe the role of the PACs in specific policy-making decisions.

9.2.3 Analytic Procedures

The socio-economic and demographic characteristics of the PAC members responding will be part of the descriptive analysis. With respect to the general area of participation, frequency distributions and contingency analysis are the most useful methods for analyzing the data. These analyses will compare PACs across districts. For particular sets of items, scales will be developed to provide for a composite score in an area. For example, an activities score might be devised for the ten activities listed as compensatory education activities in the formal interview. This would facilitate comparison across districts and allow a more specific statement to be made about this particular facet of participation of the PACs.

The organizational relationship data will be analyzed through a content analysis case study approach. That is, interview data will be described and reported based on criteria developed for the purpose of evaluating the role of PACs in the proposed structure and comparing that to the perception of actual practice. These data will be primarily qualitative. They will be aimed at the construction of categorical and typological variables.

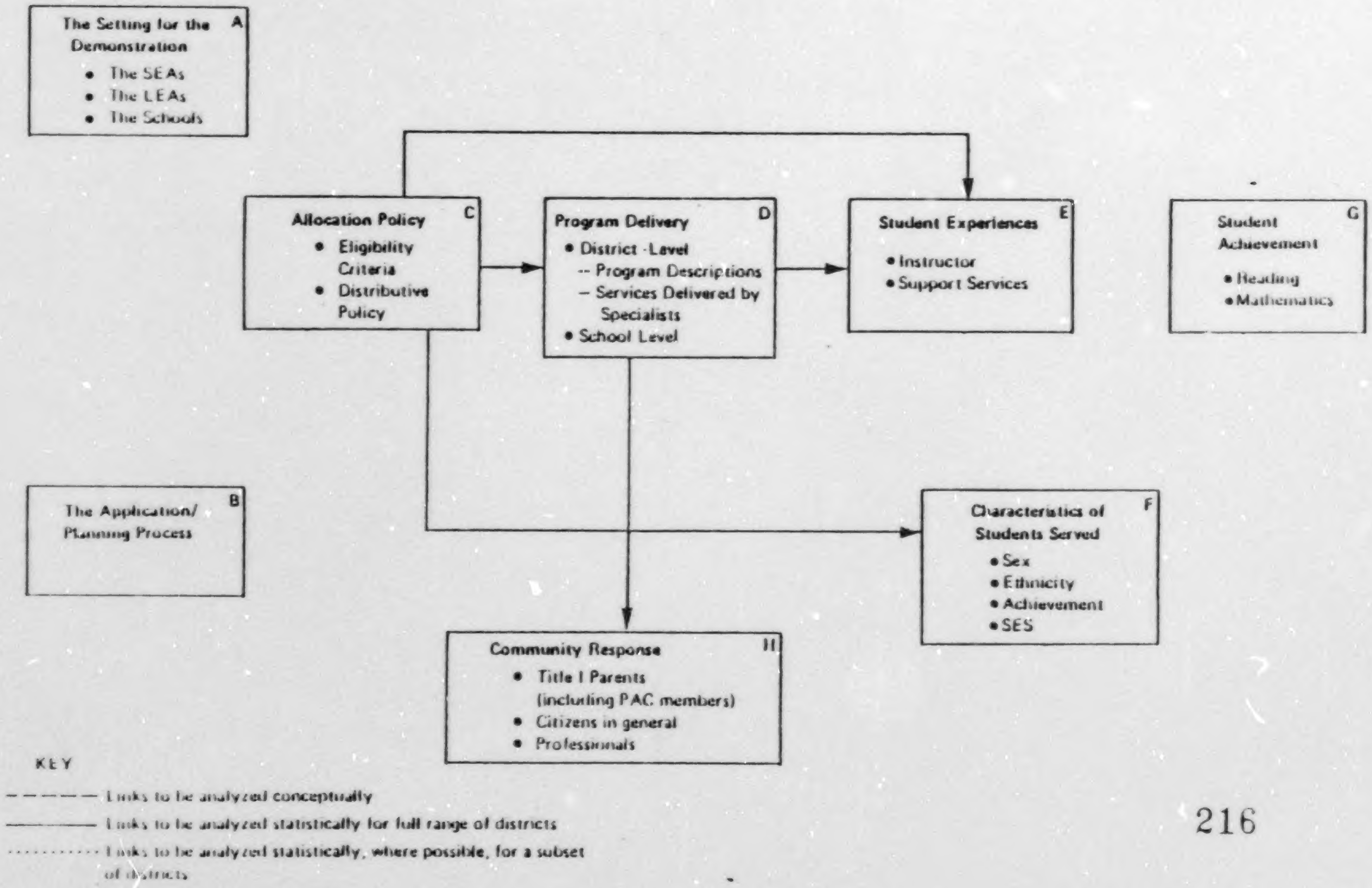
9.3 Citizen Response

The survey of citizens is designed for one very simple purpose. It provides us with an estimate of public awareness of Title I and the Demonstration. The survey is a very brief telephone interview. We expect that there will be very little or no awareness among the general public. Thus, we simply want to be able to distinguish those districts in which some dramatic event takes place and gets publicized from those in which no one is aware of the Title I program or the Demonstration.

The analysis will thus be an examination of the distribution of responses by district. For any district in which we find positive awareness answers from ten percent or more of the sample, we will seek an explanation through a case study of the public events surrounding the Demonstration.

Chapter 10

ANALYSIS OF SYSTEMIC RELATIONSHIPS


The Setting for the Demonstration A
• The SEAs
• The LEAs
• The Schools
Allocation Policy C
• Eligibility Criteria
• Distributive Policy
Program Delivery D
• District -Level
-- Program Descriptions
– Services Delivered by Specialists
• School Level
Student Experiences E
• Instructor
• Support Services
Student Achievement G
• Reading
• Mathematics
The Application/ Planning Process B
Characteristics of Students Served F
• Sex
• Ethnicity
• Achievement
• SES
Community Response H
• Title I Parents (including PAC members)
• Citizens in general
• Professionals
KEY
– – – – – Links to be analyzed conceptually
———— Links to be analyzed statistically for full range of districts
.... Links to be analyzed statistically, where possible, for a subset of districts

10.0 ANALYSIS OF SYSTEMIC RELATIONSHIPS

This section discusses the cross-sectional analysis of data collected during the baseline planning year. The approach is applicable for cross-sectional analysis during each of the three years, the planning year and the two implementation years. (The analysis of inter-year changes is presented in Chapter 11.0.) The model on the cover page of this chapter presents the variable groups and the linkages which are appropriate for the cross-sectional analyses. The appropriate sample sizes, for various levels where applicable, are inserted in each variable group box.

The relationships which will be examined in Year I are allocation related to program delivery (Link CD), allocation related to student experiences (Link CE), allocation related to characteristics of children served (Link CF), program delivery related to student experiences (Link DE), program delivery related to community response, (Link DH), and finally the relationship among the three variable groups: allocation, program delivery, the characteristics of children served and student experience (Link CDE). Since Chapters 5 - 9 of this document provide detailed discussions of each of these variable groups, this chapter deals with the analysis of relationships between groups at a general level. A discussion of relationships between, or hypotheses about, specific variables within one group versus specific variables within another group is not the intent of this chapter because these are suggested in the chapters on the variable groups.

In Section 3.2.1 we discussed the basic analytic model. We pointed out in that section that the links indicated by solid lines are those which are most relevant to the objectives of the research, and those which we are most confident we can measure. The only such link which is omitted from this discussion is the link between allocation policy and community response. Because allocation policy is established by federal regulations during the planning year, there are no LEA policy decisions which are likely to provoke responses which vary from district to district, especially not in the objectively and quantitatively measured component of community response--Title I parents' attitudes. Community response could vary as a function of demographic or political characteristics of the districts, but with the selective group of districts we are studying, our analysis of this cannot be very precise. We do expect that the policy decision to change allocation policy could induce community response, and, thus, it is included in the analysis of change.

The only three-variable link examined is that going from allocation to program delivery to student experiences (Link CDE). This link is the most central to the research objectives. The design is constructed to measure this link most precisely. While it might be interesting to explore multiple links to community response, we think this exceeds the capability of our design.

The bivariate relationships of the allocation group with program delivery, with student experiences, and with the characteristics of children served variable groups will be examined at the district level. With the district as the unit, two types of analyses are possible, correlation and analysis of variance. An examination of the differences in sample sizes for district (16) and student experiences or student characteristics (5802) or school level program delivery (524) shows the need to aggregate data from the latter three variable groups up to the district level. The mean for all people in district A for a variable in the student experience group, for example, would be the data point that is paired with district A's distributive policy variables, when correlational analyses are used. Information is lost by aggregating data, but there is no alternative when the analysis dictates a one-to-one matching of data points, as in correlational analysis. The small number of cases, when the district data alone are the units, will be handled by using a non-parametric measure of correlation, Spearman's rank order coefficient and Gamma.

Some analyses of the district level allocation variables may allow for categorizing the districts into fewer than sixteen "district types". (See Section 5.0 for examples of how this will be done.) These district types will then be used as levels of a district factor in an analyses of variance. The dependent measures will be variables from the student experience, student characteristics, and the school level program delivery variable groups. This type of analysis will enable us to identify the relationship between differing district-wide allocation plans and the other three variable groups. With the analysis of variance model, variables in the student experience, student characteristics, and school level program delivery groups will not have to be aggregated up to the district level as in the correlational analysis.

Depending upon whether the focus of the question being asked deals with differences between types of districts or the relationship between how districts rank order on an allocation variable versus how they rank order on an outcome variable (e.g., student experiences or characteristics of students receiving Title I services), analysis of variance or correlation, respectively, will be used as a means of analysis.

Analyses of the relationship of program delivery to student experiences or community responses will be performed using both the district and the school as the unit of analysis. When the district is the unit, correlational analysis and analysis of variance techniques will be used in a manner identical to the one described previously for examining the relationships of the allocation change variable group to other variable groups in the system.

The remainder of the analyses, dealing with the realtionships between program delivery variables at the district level with student experience (Link DE) and with community response variables (Link DH) will be correlational in nature. (Categorical variables will be dummy coded, and this set of dummy-codded variables used in the correlational procedures.) When school level program delivery variables are used, the measures in the other two variable groups will be aggregated to the school level. The sample size (524) is sufficiently large in this case to use the parametric correlation coefficient, Person's product-moment coefficient.

In addition to simple correlations, a series of multiple correlations between a set of program delivery variables (independent variables) and a variable in one of the other two variable groups (dependent variable) will be examined through multiple regression analysis. In addition to yielding a multiple correlation coefficient, the regression analysis will give weights for the program delivery variables which allow for comparisions of the relative importance of these independent variables in relation to the dependent variables Thus, the major focus of this analysis will be on the regression coefficients. We expect a relatively large proportion of unexplained variance and thus a low R^2. The advantage of these weights over the simple correlations of each of the program delivery variables with a variable from one of the other two variable groups is that the intercorrelations among the program delivery variables are taken into account with the multiple regression approach.

We will extend the multiple regression analysis, i.e., correlating a set of variables with one variable, by correlating a set of variables with another set of variables. This approach is canonical correlation analysis and its advantage over a series of multiple regression analyses is that it takes into account the intercorrelations of the dependent as well as the independent variables. The major drawback with canonical correlation is that the results are sometimes difficult to interpret. The statistical analysis is a few steps removed from the concrete policy variables of interest and, thus, not easily interpreted. Canonical correlations between a set of program delivery variables and a set of student experience or community response variables will be examined and interpretations of the results will be suggested.

Analogous techniques will be used to investigate the relationship between student experience and community response variables (Link EH). Because the parents in the sample are parents of Title I students in the sample, a one-to-one pairing of variables in these two groups exists at the parent/student level and no aggregation of units is necessary. Simple, multiple and canonical correlations between variables in these two groups will be examined.

The final link to be analyzed in the model involves the interrelationship of the three variable groups: allocation, program delivery, and student experience (Link CDE). Analysis of the pairwise relationships of these three variables groups has been discussed above. The interest in examining the higher-order interrelationship is to determine the extent to which they work independent of the program delivery variables. The problem can be examined by determining the unique and shared proportions of variance in the student experience variables explained by the allocation and program delivery variables. In this analysis, district allocation policy would be entered as dummy variables. These proportions of variance are easily obtained from the pairwise correlations of these variable groups. This approach is often referred to as commonality analysis.[1]

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[1] Depending on the results of the canonical correlation analysis and the regression analysis path models will probably be developed and analyzed.

Finally, the relationship of the three school types involved in this study--schools currently receiving Title I services, schools receiving Title I services in the implementation years (76-77 and 77-78) only, and schools not receiving Title I services at all--to some of the systemic relationships discussed in this chapter is of interest and will be examined. Differences associated with school type cannot be examined for the parental response variables (since only Title I parents are in the parent sample), because data are available from only one school type: schools currently receiving Title I services.

The instances in which data are available from more than one school type are the same as those for which analysis of variance, using district type as one factor, was the proposed analytic method. For these analyses, school type will be used as a second factor in a two-factor analysis of variance, so that the relationship of school type to some of the variables or the interaction effect of school types with district types on these variables will be determined.

The intent of the cross-sectional analyses proposed in this chapter is to present as comprehensive a picture as possible of the interrrelationships of the variable groups: allocation, program delivery, student experiences, student characteristics, and community response presented in the analytic model. The proposed analyses for examining these interrelationships are summarized in Table 10-1. These relationships are essential for an understanding of the model and take on added importance in the subsequent years of the study when changes in these relationships will be examined. Our analytic approach to the study of such changes is presented in Chapter 11.0.

TABLE 10-1

PROPOSED CROSS-SECTIONAL ANALYSES FOR EXAMINING THE RELATIONSHIPS BETWEEN LINKS IN THE MODEL FOR YEAR I

Link[1]	Analytic Method
$C_{16}D_{16}$	Spearman correlation
$C_{<16}D_{524}$ (Districts Grouped)	Analysis of variance
$C_{16}E_{16}$	Spearman correlation
$C_{<16}E_{5802}$ (Districts Grouped)	Analysis of variance
$C_{16}F_{16}$	Spearman correlation
$C_{<16}F_{5802}$ (Districts Grouped)	Analysis of variance
$D_{16}E_{16}$	Spearman correlation
$D_{<16}E_{5802}$ (Districts Grouped)	Analysis of variance
$D_{524}E_{524}$	Pearson correlation, multiple regression, and canonical correlation
$D_{16}H_{16}$	Spearman correlation
$D_{<16}H_{1187}$ (Districts Grouped)	Analysis of variance
$D_{524}H_{524}$	Pearson correlation, multiple regression, and canonical correlation
$E_{5802}H_{5802}$	Pearson correlation, multiple regression, and canonical correlation
$C_{16}D_{16}E_{16}$	Commonality analysis, Path analysis

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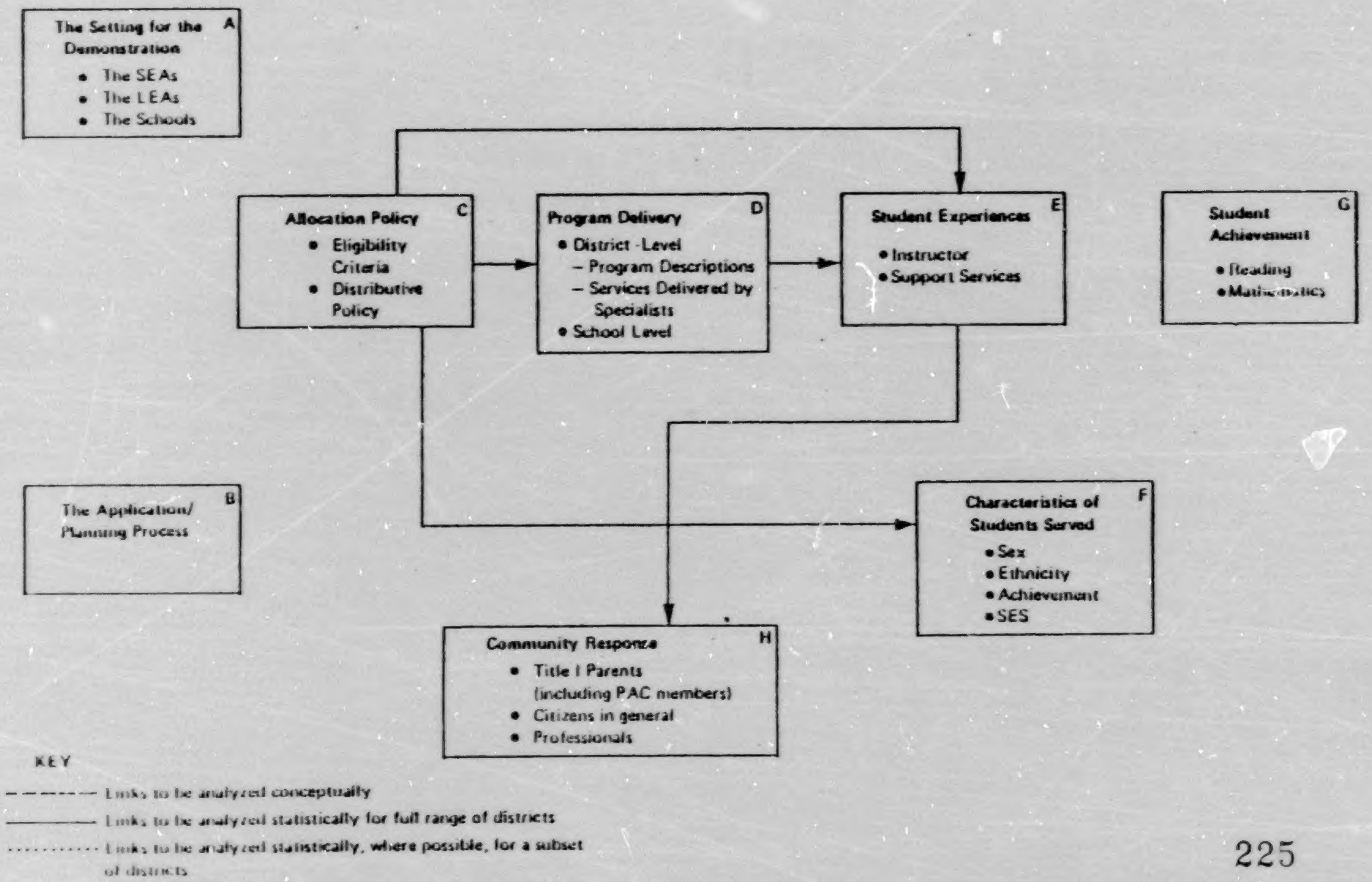
[1] The subscripts indicate the sample size for each variable group in the proposed analysis.

Chapter 11

ANALYSIS OF CHANGE IN SYSTEMIC RELATIONSHIPS


The Setting for the Demonstration A
• The SEAs
• The LEAs
• The Schools
The Application/ Planning Process B
Allocation Policy C
• Eligibility Criteria
• Distributive Policy
Program Delivery D
• District -Level
– Program Descriptions
– Services Delivered by Specialists
• School Level
Student Experiences E
• Instructor
• Support Services
Student Achievement G
• Reading
• Mathematics
Characteristics of Students Served F
• Sex
• Ethnicity
• Achievement
• SES
Community Response H
• Title I Parents (including PAC members)
• Citizens in general
• Professionals
KEY
– – – – – – Links to be analyzed conceptually
———— Links to be analyzed statistically for full range of districts
············ Links to be analyzed statistically, where possible, for a subset of districts

11.0 ANALYSIS OF CHANGES IN SYSTEMIC RELATIONSHIPS

The analysis of systemic changes reflects the key function of the research model, i.e., the examination of the effects of changes in allocation policies on schools and community. This analysis re-examines the systemic relationships detailed in the section on the basic model (Section 3.2.1) with a view toward locating those which vary from year to year. Specifically, the analysis will include the relationships between allocation policy and program delivery (Link CD), student experiences (Link CE), and student characteristics (Link CF), between program delivery and student experiences (Link DE) and community response (Link EH).

The relationship among three three-variable groups will also be examined. The first is allocation, program delivery, and student experience (Link CDE). The second is program delivery, student experience, and community response (Link DEH). Finally, we will examine allocation, student experience, and community response. (Link CEH).

The time change can be interpreted in two ways in the context of this study. Each corresponds to a different policy question and results in a different type of analysis. The first interpretation refers to relationships identified using the methods of the previous section. The implementation of allocation change may have system-wide influences which change some of the relationships. One might find, for example, that the correspondence between program delivery and student experiences changes as a result of the increased load placed on existing resources. This question, thus deals with the cross-sectional relationships as they occur over time.

The second interpretation is concerned with the influence of one sector on another. More specifically, it is concerned with how changes in one group of variables relate to changes in another group. While the previous interpretation was concerned with changes in relationships this interpretation is concerned with relationships among changes. Each of these approaches to the analysis will be presented in turn.

11.1 Changes in Relationships

In its simplest form the analysis of changes in relationships consists of a comparison of correlation coefficients and other measures of association as described in Table 10-1 across each of the three years. Thus, for instance, the correlation between a program delivery variable and a student experience variable would be computed separately for the baseline and implementation years and statistically compared. Care must be taken to use the appropriate statistical comparison. All comparative statistics have various alternative forms whose use depends on the independence of the quantities compared. Thus, a comparison of two correlation coefficients can take one of two forms depending on whether they are computed from the same or different populations.[1]

The choice of which to use in any instance will depend on the unit of analysis, and consequently, on the level of aggregation. Correlations of the allocation variables with others will normally be considered to come from the same populations. Even though the respondents may be different in different years the responses are still considered to be "from" the school district and therefore from the same population every year. Student experience data, on the other hand, are likely to come from different individuals in different years. As long as these are not aggregated to a higher level they may be considered independent. Thus, correlations of student experience data and parent data can be considered independent from year to year.

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[1] Walker, Helen M. and Joseph Lev. Statistical Inference, New York: Holt, Rinehart and Winston, 1953, pp. 255-257.

A number of techniques are available for the more general multivariate case. Chow, for instance, has devised a method for comparing two regressions.[2] This method was originally developed for use in analysis of variance problems where regressions may not be equal across all groups. Essentially, differences between corresponding regression coefficients for the two samples are computed and tested.

Extension of this method to canonical and discriminant analysis is more difficult. While the estimate of R^2 provided by these methods can be subjected to test like any other correlation coefficient, the canonical variates themselves are difficult to compare across time due to the complexity of the underlying distribution functions. At a cruder level, however, tests are available for comparisons of multivariate data sets. Entire correlation matrices can be compared using a multivariate analogue of the t-test.[3]

Generally speaking, the analysis of changes in systemic relationships consists of the comparison of corresponding parameter estimates across the three time points. These tests are available for most of the univariate statistics for analysis of variance and regression models. A few tests are available for multivariate models, especially where the predictor set is categorical, but it may be necessary to rely on global statistical tests while more refined comparisons are made judgmentally.

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[2] Chow, Gregory C. "Tests of Equality Between Sets of Coefficients in Two Linear Regressions." *Econometrica*, 28(3), 1960, pp. 591-605.

[3] Morrison, Donald F. *Multivariate Statistical Methods*. New York: McGraw-Hill, 1967.

11.2 Relationships Among Changes

The analysis of these relationships will rely on the ability to identify change, either through direct measurement or by classification methods. For continuous variates it is possible to assess change using direct difference scores. These may then be correlated with or regressed on other differences to examine relationships with changes in other sectors. These difference measures tend to have reliability problems,[4] which are more severe the lower the reliabilities of the component scores. This has the effect of attenuating the correlation coefficients, and, consequently, the regression coefficients. Thus, measures with poor reliability will produce conservative estimates of relationships.

Where the variables are not continuous or ordinal, difference scores makes little sense. In this case a classification of the unit (district, school, pupil, parent) by the type of change results in a typology which can be used in cross-tabulation or in analysis of variance. Say, for example, that data on compensatory versus basic programming is dichotomous. A table might be constructed as follows:

		Implementation Year	
		Compensatory	Basic
Baseline Year	Compensatory	A	B
	Basic	C	D

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[4] Cronbach, Lee J. and Lita Furby. How We Should Measure 'Change' or Should We? Psychological Bulletin, 1970, 74, pp. 68-80.

This classification identifies four groups who received different patterns of service over the two years. This classification might be used as an indicator of change in further analysis.

Once a direct measure of change or a classification is available the methods discussed in Chapter 10 can be used. The same attention must be paid to the nature of the resulting variable and the appropriate level of aggregation, so that appropriate statistical methods are used.

Table 11.1 summarizes the techniques to be used in the analysis of systemic change. It separates the two types of change analysis described in this chapter. The first column outlines analytic methods to be used for the comparison of relationships across years. The second column outlines analytic methods for the relationships among changes. In most cases the methods are similar for the two types of analyses. In a few cases, we do not plan analysis of the relationships among changes because the attenuation problems would be too great. In other cases, analysis of variance is substituted for Spearman's correlation because of attentuation problems.

TABLE II-1

PROPOSED ANALYSES FOR EXAMINING THE RELATIONSHIPS BETWEEN LINKS IN THE MODEL FOR YEAR I

Link[1]	Comparison of Relationships Across--Analytic Method	Relationships Among Changes
$C_{16}D_{16}$	Spearman correlation	Analysis of variance
$C_{16}D_{524}$ (Districts grouped)	Analysis of variance	Analysis of variance
$C_{16}E_{16}$	Spearman correlation	No analysis
$C_{16}E_{5802}$ (Districts grouped)	Analysis of variance	Analysis of variance
$C_{16}F_{16}$	Spearman correlation	No analysis
$C_{16}F_{5802}$ (Districts grouped)	Analysis of variance	Analysis of variance
$D_{16}E_{16}$	Spearman correlation	No analysis
$D_{16}E_{5802}$ (Districts grouped)	Analysis of variance	Analysis of variance
$D_{524}E_{524}$	Pearson correlation, multiple regression, and canonical correlation	Pearson correlation, multiple regression, and canonical correlation
$C_{16}H_{16}$	Spearman correlation	No analysis
$C_{16}H_{1187}$ (Districts grouped)	Analysis of variance	Analysis of variance
$C_{524}H_{524}$	Pearson correlation, multiple regression, and canonical correlation	Pearson correlation, multiple regression, and canonical correlation
$E_{5802}H_{5802}$	Pearson correlation, multiple regression, and canonical correlation	Pearson correlation, multiple regression, and canonical correlation
$F_{2901}H_{2901}$	Pearson correlation, multiple regression, and canonical correlation	Pearson correlation, multiple regression, and canonical correlation
$C_{16}D_{524}E_{5802}$	Commonality analysis, Path analysis	Commonality analysis, Path analysis
$D_{524}E_{2901}H_{2901}$	Commonality analysis, Path analysis	Commonality analysis, Path analysis
$C_{16}E_{2901}H_{2901}$	Commonality analysis, Path analysis	Commonality analysis, Path analysis

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[1] The subscripts indicate the sample size for each variable group in the proposed analysis.

12.0 COST ANALYSIS OF TITLE I DEMONSTRATION PROJECTS

This part of the analysis is integrated with other parts to the extent that the same questionnaires are used to collect the data. However, the use of the data is quite different. The questionnaire data is used to measure resource distribution. Resource distribution is then used to develop cost models which have standardized algorithms, but district-specific price factors. These are then refined and adjusted district by district.

The cost analysis provides estimates which relate to the distribution of resources across schools and students, but the analytic procedures and the conceptual framework do not correspond to the general analytic model in more specific terms.

The conceptual framework and analytic procedures are dependent on and follow the analysis described in Chapters 4 through 11.

Cost analysis is an integral part of the research on the effects of Demonstration Compensatory Education Projects, as indicated in the research priorities presented in Chapter 2.

- The research will document and describe changes in the allocation of Title I funds; and
- The study will analyze the effects of allocation and eligibility changes with regard to costs and savings in the administration of Title I compensatory programs.

In order for the cost analysis to fulfill these priorities it is important to specify in greater detail the requirements of the cost analysis as well as its specific design. These are the topics of this chapter.

12.1 Design of the Cost Study

The design of the cost analysis described in this section addresses the priorities noted above. The approach of the cost analysis is computer modeling of resources in the school districts. The process of computer modeling of resources is one which has gained wide acceptance in a variety of fields. It has proven particularly useful in dealing with the problems that are complex, subject to continual modification, and that require heuristic solution.

The general approach involves eight basic steps:

- Formulation of the problem;
- collection and processing of real world data;
- formulation of mathematical models;
- estimation of parameters of operating characteristics from real world data;
- evaluation of model and parameter estimates;
- formulation of the computer program;
- design of simulation experiments; and
- analysis of the simulated data.

This general approach, described in many basic texts on computer simulation[1], will be used in the cost analysis. Rather than discuss principles of computer simulations in general here, it would be more useful to describe the ways that computer simulation will be used in the cost analysis.

Using data which has already been collected, analysts will first construct first-approximation computer models of the resource allocation processes in the sixteen school districts. (An example of the general form of these models is provided at the end of this chapter.) These first-approximation models will be examined jointly by analysts and district officials in order to determine the modifications required to improve the validity of the models. Both the models and the requisite modifications will be different for each of the sixteen districts. The model construction-evaluation-modification process will be iterative throughout the life of the project. The steps required in this process are discussed in more detail below.

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[1] Naylor, Thomas H., Computer Simulation Experiments with Models of Economic Systems. N.Y.: John Wiley & Sons, 1971.

First, analysts will extract relevant program cost information for each school district from the previously generated documents supplied to Abt Associates (e.g., district budgets, Title I evaluations, final financial reports of the district to the state, district applications for participation in the project) as well as information generated via previously designed questionnaires (e.g., Principal Form I, Principal Supplement, Student School Record Information Form). "Relevant program cost information" pertains to resources distributed across schools. It would include information about factors which describe instructional programs: what types of instructional personnel are used and how; support personnel requirements; facilities supplied, materials and equipment requirements; and requirements on cleaning and repairing facilities. Additional district-level data will also be gathered describing overlap of funding sources and district fiscal capacity.

Second, using this data (supplemented by additional requests for specific pieces of information as may be required) a cost model will be constructed for each program to be examined. As implied above, a cost model is fundamentally a computer program which transforms the gathered data using a set of algorithms or formulas, and print-out information required by the analyst conducting the cost study. In other words, a first-approximation model is constructed which shows the resources used in the baseline year for each program.

Third, the analysts will take the first-approximation models to the sixteen school districts where the iterative process of evaluation and modification begins in collaboration with district officials. (It is estimated that the first visits to the districts will be in June.) Once the reactions of the district officials have been ascertained, analysts will specify additional data requirements and make modifications in the functional content of the conceptual models.

Fourth, these modifications will be programmed into computer models. As the additional data is received, it is also included in the models. In this manner, the validity of the computer models will improve over successive iterations of interaction with school district officials.

Fifth, as year-to-year modifications are made in the operations of the Title I programs (and in relevant non-Title I programs) the changes will be incorporated into the computer models of the district. The computer models, then, provide the medium for recording changes as well as measuring the effects of changes.

Perhaps the most effective way to describe the detailed modeling process within this limited space is to walk through the development of a rough, simple prototype cost model. This is the subject of the next section.

12.2 Building a First-Approximation Cost Analysis Model For An Illustrative School District

The model presented below is prototypical and quite simplistic compared to what will be necessary to treat cost analysis in the Demonstration Study. The data included in this model are similar to data found in documents prepared by Unified School District No. 259 in Wichita, Kansas, one of the sites to be included in the cost analysis. The model is described in terms of input variables, output variables, and computing algorithms, It is presented here only as an example of the type of model which will be developed.

12.2.1 Input Variables

Examination of district documents indicate that two Title I programs are operated by the district: Elementary Remedial Reading (ERR) and Secondary Work-Study (SWS). The ERR program enrolls 1300 students and the program runs for the entire school year. (We will, of course, use average daily attendance whenever possible rather than enrollment.) During each week of the program the enrolled students receive five 45-minute periods of direct reading instruction (one period per day). In addition they attend a reading lab three additional periods per week. The program is staffed with the following personnel, each of whom devotes fractional amounts of time to the program: 65 teachers, 8 other full-time professionals, 2 part-time professionals, 15 full-time teachers' aides, 5 part-time teachers' aides, 3 full-time classified personnel, and 1 part-time classified person. The personnel types each devote the following amounts of time per week to the program (out of a maximum possible of eight periods): teachers, 8; other full-time professionals, 2; part-time professionals, 2; full-time teacher aides, 6; part-time teachers' aides, 2; full-time classified personnel, 3; and part-time classified personnel, 1. The yearly and hourly average pay rates for each of these personnel types have also been determined: teachers, $12,000 per year; other full-time professionals, $16,000 per year; part-time professionals, $11.00 per hour; full-time teachers' aides, $7,000 per year; part-time teachers' aides, $4.00 per hour; full-time classified personnel, $9,000 per year; part-time classified personnel, $4.50 per hour.

Annual materials and supplies for the program cost $5,000. The imputed cost of equipment for the program for one year is $10,000, and 50,000 square feet of classroom space is utilized in the program. Examination of budget documents yielded various estimates such as the cost of maintenance is approximately $.50 per square foot in the district and the cost of operation is $.75 per square foot. It also costs about $31 per square foot to construct new space in this district. All of the input variables described above are presented in the top-half of Table 12-1. The above costs were all derived through an examination of school district budget and expenditure reports. In some cases, the methods of depreciation and amortization were determined a priori. We will do this in a standard form across districts.

As mentioned earlier, the second Title I program in this district is called the Secondary Work-Study program. Similar input data has been gathered for that program and is reported in the top-half of Table 12-2.

12.2.2 Output Variables

From the data provided by the input variables it is possible to derive a variety of output variables. Some of the most useful of which would include: full-time equivalencies of students and personnel; the number of square feet per student of space used; average class size; and the cost per student for personnel and non-human resources used in the program as well as the total current cost per student for each program. The values for each of these variables for the ERR program are presented on the bottom-half of Table 12-1. The corresponding values for the SWS program are presented in the bottom-half of Table 12-2. Notice, incidentally, that the current expense per student in the ERR program is $723.32, whereas the per pupil expense of the SWS is $2,913.20.

12.2.3 Computing Algorithms

The "heart" of the cost model is composed of the computing rules which convert the data on the input variables into data on the output variables. Several of the algorithms

TABLE 12-1

ELEMENTARY REMEDIAL READING PROGRAM

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WITCHITA SCHOOL DISTRICT

ELEMENTARY REMEDIAL READING PROGRAM

 INPUT VARIABLES

 ENROLLMENT  1300,     MINUTES PER MODULE 45,     MODULES PER WEEK  4,     WEEKS PER YEAR 36

                           NUMBER          PAY RATE           MOD PER WK IN PROGRAM

TEACHERS                       65.   12000,00 PER YEAR                        4.
OTHER PROFESSIONALS             4.   16000,00 PER YEAR                        2.
HOURLY PROFESSIONALS            2.      11,00 PER HOUR                        2.
SALARIED TEACHER AIDES         15.    7000,00 PER YEAR                        4.
HOURLY TEACHER AIDES            5.       2,00 PER HOUR                        2.
SALARIED OTHER CLASSIFIED       3.    9000,00 PER YEAR                        3.
HOURLY OTHER CLASSIFIED         1.       4,50 PER HOUR                        1.

 COST OF MATERIALS AND SUPPLIES $  5000,

 COST OF EQUIPMENT $ 10000,

 INSTRUCTIONAL SPACE UTILIZED  10000, SQUARE FEET

 COST PER SQUARE FOOT: MAINTENANCE $ 0,50     OPERATION $ 0,75     CONSTRUCTION $31,00

 OUTPUT VARIABLES

 FULL TIME EQUIVALENTS: STUDENTS              260,0
                        TEACHERS               13,0
                        TEACHER AIDES           2,2
                        OTHER PROFESSIONALS     0,4
                        CLASSIFIED              0,2

 SQUARE FEET PER STUDENT   38,5

 AVERAGE CLASS SIZE  20,0

                  NUMBER PER STUDENT          COST PER STUDENT

TEACHERS                   0.050                $ 600,00
TEACHER AIDES              0.010                $  64,73
OTHER PROFESSIONALS        0.002                $  29,16
CLASSIFIED                 0.001                $   8,78
MAINTENANCE                                     $   3,85
OPERATION                                       $   5,77
MATERIALS AND SUPPLIES                          $   3,85
EQUIPMENT                                       $   7,69

CURRENT EXPENSE                                 $ 723,32

 FRACS 0,012  FITAS 0,0   FIHTAS 0,0
```

TABLE 12-2

SECONDARY WORK-STUDY PROGRAM

```
WICHITA SCHOOL DISTRICT

SECONDARY WORK-STUDY PROGRAM

 INPUT VARIABLES

 ENROLLMENT    50.     MINUTES PER MODULE 45.     MODULES PER WEEK 20.     WEEKS PER YEAR 18

                                NUMBER         PAY RATE          MOD PER WK IN PROGRAM

TEACHERS                           5.    12000,00 PER YEAR                    20.
OTHER PROFESSIONALS                0.    15000,00 PER YEAR                     0.
HOURLY PROFESSIONALS               0.       11,00 PER HOUR                     0.
SALARIED TEACHER AIDES             0.     7000,00 PER YEAR                     0.
HOURLY TEACHER AIDES               5.        4,00 PER HOUR                    10.
SALARIED OTHER CLASSIFIED          0.     9000,00 PER YEAR                     0.
HOURLY OTHER CLASSIFIED            2.        4,50 PER HOUR                    10.

 COST OF MATERIALS AND SUPPLIES $ 50000.

 COST OF EQUIPMENT $ 20000.

 INSTRUCTIONAL SPACE UTILIZED       0. SQUARE FEET

 COST PER SQUARE FOOT: MAINTENANCE $ 0,50     OPERATION $ 0,75     CONSTRUCTION $31,00

 OUTPUT VARIABLES

 FULL TIME EQUIVALENTS: STUDENTS                12,5
                        TEACHERS                 1,2
                        TEACHER AIDES            0,0
                        OTHER PROFESSIONALS      0,0
                        CLASSIFIED               0,0

  SQUARE FEET PER STUDENT    0,0

  AVERAGE CLASS SIZE  10,0

                    NUMBER PER STUDENT          COST PER STUDENT

 TEACHERS                  0,100                   $1200,00
 TEACHER AIDES             0,090                   $ 216,00
 OTHER PROFESSIONALS       0,000                   $   0,00
 CLASSIFIED                0,020                   $  97,20
 MAINTENANCE                                       $   0,00
 OPERATION                                         $   0,00
 MATERIALS AND SUPPLIES                            $1000,00
 EQUIPMENT                                         $ 400,00

 CURRENT EXPENSE                                   $2913,20
```

used in this simple model are discussed here. Pupil/Teacher ratio (an output variable), for example, can be calculated as avarage daily attendance (an input variable) divided by number of teachers (another input variable). In the ERR program the calculation with the actual data would be as follows: Class Size = 1300/65 = 20. The figure is reported on Table 12-2.

Sometimes this conversion from input to output requires several steps. Full-time equivalent students (an output variable), for example, is computed by multiplying enrollment (an input variable), times periods or "modules" per week (also an input variable), times fraction of the year taught. However, fraction of the year taught is not an input variable; it must first be calculated before it can be used in the calculation of full-time students. Fraction of the year taught (call it an "indigenous" variable) is calculated by multiplying minutes per period (an input variable) times the number of weeks per year of the course (an input variable) divided by 64,800 (a constant which is also included with the other inputs).

If we use the input data for the ERR program the calculations would be as follows:

$$\text{Fraction of Year Taught} = \frac{\underline{\text{Minutes per Modules X Weeks per Year}}}{64{,}800} =$$

$$= \frac{45 \text{ X } 36}{64{,}800}$$

$$= \frac{1{,}620}{14{,}800}$$

$$= \frac{1}{40}$$

Then,

$$\text{Full-Time Equivalent Student} = \text{Enrollment} \times \text{Fraction of Year} \times \text{Modules per Week}$$

$$= 1{,}300 \times \frac{1}{40} \times 8$$

$$= 260$$

Technically, then, input variables can be used to create indigenous variables and output variables, combinations of which can be used to create new output variables.

12.2.4 Program Comparison

The two Title I programs can be compared with each other in terms of several factors, e.g., cost per pupil, number of pupils served. It will also be important to compare a composite Title I effect with an aggregate model for the rest of the Case School District. The same type of process used to derive the program costs can be used to derive a composite of Title I as well as a composite of all other relevant instructional efforts in the district. The Title I composite can be derived by using as input variables the output variables of the two Title I programs. For example, the full-time equivalent students in the Title I composite program can be calculated by merely adding the number of full-time equivalent students in the ERR program to the number of full-time equivalent students in the SWS program. An example of what this might look like is presented on Table 12-3. (A composite of the Illustrative Case School District was not done for this example.)

12.2.5 Modification of the Computer Program

As mentioned earlier, one of the chief advantages of computer models is the relative ease with which fundamental conceptual modification or simple error correction can be

TABLE 12-3

TITLE I COMPOSITE PROGRAM

```
WITCHITA SCHOOL DISTRICT

 ALL TITLE I PROGRAMS COMBINED

 OUTPUT VARIABLES

 FULL TIME EQUIVALENTS: STUDENTS              272,5
                        TEACHERS               14,2
                        TEACHER AIDES           2,2
                        OTHER PROFESSIONALS     0,4
                        CLASSIFIED              0,2

  SQUARE FEET PER STUDENT   37,0

  AVERAGE CLASS SIZE  19,3

                     NUMBER PER STUDENT           COST PER STUDENT

                                                  • $ 627,52
 TEACHERS                      0,052                $  71,47
 TEACHER AIDES                 0,011                $  27,45
 OTHER PROFESSIONALS           0,002                $  12,34
 CLASSIFIED                    0,002                $   3,70
 MAINTENANCE                                        $   5,56
 OPERATION                                          $  40,74
 MATERIALS AND SUPPLIES                             $  22,22
 EQUIPMENT
```

incorporated into previous work. The example cost model requires a large number of conceptual modifications. For example, in calculating full-time equivalencies for the different personnel types, the hourly and salaried personnel for each personnel category were lumped together. However, as currently formulated, the model only includes the full-time equivalencies of the salaried personnel. This error is easily corrected in the computer program by inserting three statements between appropriate lines of the computer program.

As a second example, assume that cost per full-time equivalent student is determined to be a more useful output measure than cost per enrolled student. This modification requires merely changing four statements of the computer program. It is in dealing with a very large number of problems such as these that the computer greatly enhances the flexibility of the cost analysis.

12.3 Requirements of the Cost Analysis

The requirements of the cost analysis emanate from several sources: e.g., the priorities of the research project itself, commonly accepted standards of cost accounting, and the particular operating conditions of public elementary-secondary school districts. Eight general requirements of the cost analysis which the approach describe above address.

12.3.1 Comparative Focus

The overall cost analysis, although longitudinal in nature, must be capable of providing comparable cost estimates across programs within districts on a year-to-year basis. This requirement is based on the premise that programs in school districts are not funded and administrated in isolation from each other. Rather they draw upon common pools of resources, which may or may not be utilized in unique ways. There is what might be termed an "interaction effect" among programs: the resources of Program A are determined, at least in part, by the resource requirements of Program 3. Technically, this is not supposed to be the case between regular and Title I programs; however, there is justification for presuming that this could be a factor when Title I restrictions, e.g., comparability, are lifted. The same consideration needs to be given to students, i.e., the cost analyses must be capable of comparing Title I and non-Title I students cross-sectionally. We will be able to accomplish both because of the resource data collected from principals and teachers.

12.3.2 Relationship of Physical Resource to Resource Prices

Costs are determined by the unit prices and quantities of resources devoted to education. Therefore, in order to determine costs, quantities of resources used as well as unit prices must be determined. The cost analysis must first determine allocations of instructional and administrative support services to different groups of students before costs per se can be ascertained. The cost analysis must, in essence, then deal with priorities 2 and 3 of the overall study before it can deal effectively with priorities 1 and 5. (See

12.3.3 Comparability with Other Parts of the Study and with District Perceptions

The utility of the cost analysis will depend to some extent on the degree to which the cost model reflects the program descriptions and estimates found in other parts of the analysis. Variables, data, and functional relationships of the cost model will miror conceptions of programs used in other project analyses. They will also be tested on knowledgeable individuals in the school districts, e.g., budget officers.

12.3.4 Measure of "Economic" and "Accounting" Costs

There are two general frameworks within which to view costs of resources: as actual expenditures (accounting costs) and as imputed expenditures ("economic" costs). The cost of teachers in a program can often be legitimately described by the actual dollars paid to teachers (accounting costs). The cost of specialized equipment in a program may be described more accurately by imputing an economic cost than by recording its accounting cost. (Yearly equipment costs are often derived by capitalizaing the original purchase price over the expected life-span of the equipment.) The two types of costs provided information for different purposes: one relates to yearly expenditures on a program; the other relates to a dollar measure of resources going into a program. The distinction is important, because it provides a means for determining resource availability in a district.

One factor that can influence how alternative programs are constructed is the current availability of different factors already "owned" by the district. For example, a school district with declining enrollment and relatively low utilization of school facilities would, ceteris paribus, be more likely to design programs consuming relatively large amounts of instructional space. On the other hand, a district in which instructional space was already highly utilized would be more likely to design programs not requiring large amounts of additional space. Districts with relative excesses of certain kinds of equipment may be more likely to design programs using that equipment than programs which would require massive infusions of new equipment. While stated as assumptions here, those are considerations that should not be overlooked when attempting to trace how districts use resources. The implication is that we will treat acquisition and capital expenditures separately from depreciation and operating costs.

12.3.5 Analysis of Differences in the Unit Prices Across Input Factors Within a School District (As Well As Across School Districts for a Given Factor)

Another factor which must be examined in the cost analysis is the difference in the relative (and absolute) prices of input factors among school districts. For example, the cost of space relative to the cost of labor relative to the cost of supplies and materials, etc., will be different among school districts. It is presumed here that this fact will encourage differences in program configurations in different districts. (It is for this reason that national, regional, or state standard prices should be affixed to the resources examined without first determining and affixing intra-district factor prices.)

12.3.6 Consideration of Fiscal Capacity in the Expenditure Patterns of School Districts

Perhaps the most basic issue in resource utilization relates to the inherent differences among school distircts throughout the country to raise money for education. Different spending levels in school districts yield different amounts and combinations of factor inputs. These differences can include differences in quality.

It is axiomatic to say that the resource allocation patterns of the sixteen Title I districts cannot be usefully examined outside the context of their ability to raise revenues, especially if the intent of the project is to generalize to other districts. We will examine fiscal capabity as it relates to the districts' capabilities to alter compensatory allocation policy.

12.3.7 Analysis of Impact of Funding Sources On District Spending

Very closely related to the issue of fiscal capacity is that of funding sources, i.e., where the money comes from and what strings are tied to it. Funding sources influence how resources are used in school districts. Perhaps an example here will illustrate the point.[2]

In California state-aid formulas there is a class-size bonus: the district receives $30 bonus for each child in grades

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Levy, Frank, *et*. *al*. *Urban Outcomes*. Berkeley, California: University of California Press, 1974.

1 through 3 who is in a class of less than thirty-one pupils. Prior to the implementation of this bonus, the district determined class size by a formula based on the percentage of children in the school with IQs below ninety. Average class size was to be thirty-four when that percentage was 15 or less, declining to twenty-nine when the percentage was 40 or more. The state's implementation of the class-size bonus meant that there would be a net loss of general revenue if any class was larger than thirty-one, and so the larger classes were eliminated. Several years after the formula was in effect, the district was operating at a deficit, and had to make severe cuts in its supply category. These cuts would have been avoided by increasing the size of the brightest elementary classes to thirty-three or thirty-four and many administrators would have preferred this alternative, but the class-size bonus took the decision out of their hands. Any savings due to increased class size would have been wiped out by the compensating loss of the class-size bonus. When comparing alternative program configurations, e.g., pre-versus post-Title I regulations and Title I versus regular, the effect of different bundles of funding sources must be considered. These analyses will start from the survey findings but will take into account the cost decisions made by administrators.

12.3.8 Minimization of Various Practical Problems Encountered in Collecting Cost Data From School Districts

Districts do not collect and store data in forms that are directly useful for the cost analysis. Program cost accounting is, for the most part, not undertaken on a regular basis by school districts. Further, most program cost accounting information that is undertaken varies in detail and scope across school districts. Indeed, even the more common object/function accounting structure of school districts will vary in form from state to state.

One method for coping with this problem is to pre-specify the program cost information required of each district and rely upon district administrators to derive the cost data as best they can. There are several serious drawbacks to this general approach. First, it will be generally more difficult to secure the cooperation of district staff, because significantly more effort is required on their part. In all likelihood the requisite information cannot be gathered solely by a single department such as the district business office. Instead of producing data that they typically collect, they would be asked to derive and apply cost accounting formulas to currently report data in order to produce data directly useful for cost analysis. Second, valid interpretations of the resulting program cost accounting data would be predictated upon an understanding of each school district's actual cost allocation formulas, as well as an understanding of the extent to which figures reflect full-absorption costs or merely direct costs. (Allocation formulas could be pre-specified by the research staff, but the rigor with which such formulas would be applied by local district personnel would still be in question.) Third, in order to make any useful comparisons among districts, it would be necessary to modify the resulting cost analyses of each district to reflect consideration of similar types of constraints (something that will be required regardless of the data gathering approach take).

Standard social science methods (e.g., exhaustive questionnaires) for coping with the problem, by themselves, lack sufficient flexibility to capture the idiosyncracies of school district accounting procedures. Results based on questionnaires must be adjusted for such idiosyncracies. Secondly, questionnaire data do not automatically provide a means for cost analysts and district officials to reach agreement on the validity of the ultimate cost shifts recorded in each on the validity of the ultimate cost shifts recorded in each school district. It is vital that, to the extent possible, these two groups agree on financial data. We, of course, will make the final decisions, but these will take into account the adjustments suggested by district officials.

13.0 GENERAL OUTLINE OF PURPOSE AND SCOPE OF FUTURE REPORTS

13.1 Reports and Audiences

There are two types of future reports planned in this study. First, there will be periodic non-technical summaries, all of which are inteded for a general audience. Second, there will be substantive reports on analyses of empirical data. These will be more comprehensive and technical than the summaries. They will follow the analytic plan described in this report. They will vary as to the audiences to whom they are addressed.

Table 13.1 lists the substantive reports based on analysis of empirical data which are included in the contract between AAI and NIE. For each, it presents the delivery date of these reports and the primary and secondary audience(s) to whom each is addressed.

All reports have the NIE Compensatory Education Group as a primary audience. Other NIE and Office of Education staff members are listed as secondary audiences for reports beginning with the preliminary report in Year I. They are also the primary audience for the final report. We expect that the NIE Compensatory Education Group will want to share these reports more widely as we progress and that the final report will facilitate serious debate among federal policy makers.

In the column labeled "Technical Research Community" we distinguish between reports for which they are a primary audience and reports for which they are a secondary audience. Those for which they are a secondary audience, we expect to be reviewed by a small group of consultants to AAI and to NIE. Those for which they are a primary audience, we expect to be more widely circulated.

We expect the Demonstration districts to be an audience for the final reports each year.

TABLE 1

FUTURE SUBSTANTIVE ANALYTIC REPORTS
BY INTENDED AUDIENCE AND DELIVERY DATE

Reports	AUDIENCES						Delivery Date
	NIE Compensatory Education Group	NIE And OE Staff	Technical Research Community	Congress And Other Policy Makers	Demonstration Districts	General Audiences	
Analysis Plan Based on Usable Data	++	O	+	O	O	O	6/1/76
Report On Preliminary Data Analysis	++	O	+	O	O	O	7/15/76
Draft Report on First-Year Findings	++	O	+	O	O	O	8/31/76
Preliminary Report On First-Year Findings	++	+	++	O	O	O	9/30/76
Final Report On First-Year Findings	++	+	+	O	+	O	12/1/76
Preliminary Report on Second-Year Findings	++	+	++	O	O	O	7/15/77
Final Report On Second-Year Findings	++	+	+	+	+	O	8/15/77
Preliminary Report On Three-Year Findings	++	+	++	O	O	O	7/25/78
Final Report On Three-Year Findings	++	++	+	++	++	+	8/15/78

KEY: ++ = Primary Audience + = Secondary Audience O = Not Anticipated as an Audience

Finally, we expect the final report, which is to be transmitted directly to Congress, to be addressed by all of these six audiences.

13.2 First Annual Report

The first annual report is due in final form on December 1, 1976. However, it is to be submitted in several versions over the time period from July 15 to December 1, 1976. Through discussions with NIE's technical staff, we have agreed to a staged submission of this report with varying parts of the analysis included at different stages. The remainder of this chapter describes the purpose and scope of the first annual report, outlines its contents, and describes the staging based on that outline.

The primary purpose of the first annual report is descriptive: to describe the quantity and quality of educational services received by different types of students during the 1975-76 school year, to describe the services delivered by Title I and other compensatory services during this base-line year, to describe community views on the Title I program, and to present cost allocation models for the districts. An additional purpose is to update and describe the allocation policy changes which are implemented in the Fall of 1976, along with the evolution and decision-making processes which led to these particular forms of implementation.

The scope of the first annual report is comprehensive. It will cover all of the 1975-76 cross-sectional analyses described in Chapters 4 through 12.

The progress of the analyses and our reporting of them will take place step by step during the summer and fall. Table 13.2 provides a chapter outline of the first annual report, which closely parallels the chapter outline in this report and shows the reporting dates for each analysis.

TABLE 13-2

CHAPTER OUTLINE OF FIRST ANNUAL REPORT INDICATING DELIVERY DATES

CHAPTER	INITIAL REPORTING DATE
1. Overview and General Design	7/15
2. The Context	7/15
3. Allocation Policy	8/31
3.1 Case Studies	
3.2 Typologies	
4. Program Delivery	7/15
5. Characteristics of Title I Students	8/31
6. Instructional Services Received	8/31
7. Community Response	8/31
8. Allocation Policy Related to Program Delivery	9/30
9. Allocation Policy Related to Characteristics of Title I Students	9/30
10. Allocation Policy Related to Instructional Services	9/30
11. Additional Systemic Relations	12/1
12. Cost Models	12/1
13. Summary	12/1

There are three determinants of the stage at which particular parts of the analysis will be reported. First is the time at which data is collected. Second is the complexity of the analytic data file required for the analysis. Third is the degree to which a particular analysis is contingent upon other previous analysis.

Our plan is to submit the early versions and receive review and comments from NIE and our consultants sufficiently prior to the next reporting date to be able to submit revised versions of previously submitted analyses with each new report. Thus, the reporting will be cumulative in scope and refined step by step.

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RESEARCH ON DEMONSTRATION
TITLE I COMPENSATORY EDUCATION PROJECTS

ANALYSIS PLAN
Volume II - APPENDICES

April

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RESEARCH ON DEMONSTRATION
TITLE I COMPENSATORY EDUCATION PROJECTS

ANALYSIS PLAN
Volume II - APPENDICES

April

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TABLE OF CONTENTS

APPENDIX A: STATEMENT OF THE EVOLUTION OF THE DESIGN

APPENDIX B: INSTRUMENTATION

APPENDIX C: POSSIBLE PROBLEMS IN DESIGN IMPLEMENTATION AND IMPLICATIONS THEREOF

APPENDIX D: DATA COLLECTION PROCEDURES, QUALITY CONTROL, AND CONFIDENTIALITY

APPENDIX E: DATA BASE ORGANIZATION

APPENDIX F:

APPENDIX A

STATEMENT OF THE EVOLUTION OF THE DESIGN

Two major factors contributed to the evolution of the research design which is described in Chapter 3. First, after our initial review of the school districts' proposals, we discovered that they were proposing demonstrations quite different from those we and NIE had predicted. We began to consider the implications of these differences for our research design immediately. Second, after the development of instruments, NIE technical staff suggested modifications in nine design components. These recommendations were the result of reordering the priorities with regard to research objectives, as described in Chapter 2. This section describes the resolution of problems raised by these two factors. It can best be described in terms of the NIE recommendations and the eventual actions taken on them. Nine modifications were suggested, and these are listed below:

1. Three stage sampling of students,
2. Sampling students in only two grades,
3. Changing the longitudinal study unit to Grades Within Schools, rather than Students,
4. Selecting classroom teachers and specialists only as linked to sample students,
5. Asking information from classroom teachers and specialists referenced to sample students,
6. Expanding the Classroom Activities Log from a simple to a complex instrument, and contracting the information asked of classroom teachers and specialists in questionnaire format,
7. Redefining specialists to include all persons providing language arts and math instruction, including Aides, Para-professionals, Parents and Other Volunteers, Older students, etc.,
8. Contracting the scope of the Parent Interview, and
9. Using district and principal data to describe service delivery by funding source, as well as numbers and characteristics of students served.

We reviewed not only the policy scope of these recommendations, i.e., coverage of policy issues to which this research is addressed, but also their relation to technical scientific standards, and to practical problems in the collection of data. Tables A-1, A-2, and A-3 present our assessment of the advantages and disadvantages which the proposed modifications offered to (1) the coverage of policy issues, (2) technical scientific standards, and (3) respondent alienation and associated potential problems of non-cooperation and missing information. These three tables are summarized in Tables A-4a and A-4b, which present our recommendations:

1. Three Stage Sampling. This modification was in principle a minor departure from the plans we were already following. Thus, there was little difficulty in agreeing to the principle.

The agreed-upon approach can best be described as consisting of two sampling stages--schools and students--within selected grades.

The first stage for the sampling strategy is at the level of schools. Three strata are defined. The first includes schools which currently receive Title I support and will continue to do so during the Demonstration. The second includes those schools which do not currently receive Title I support, but will during the Demonstration. The third are schools which do not now receive Title I support and will not receive Title I support.

The second step involves the selection of two grades. The NIE proposal which we accepted was to select two grades from among the elementary grades (1 through 6).

The second stage is at the level of students. It was agreed that we would select two students per sampled classroom. In schools receiving Title I support, there are two potential strata. Where possible, we will select one student who is receiving Title I services and one student who is not receiving

TABLE A-1

MAJOR ADVANTAGES AND DISADVANTAGES OF NIE PROPOSED MODIFICATIONS WITH REGARD TO POLICY SCOPE

PROPOSED MODIFICATIONS	MAJOR ADVANTAGES	MAJOR DISADVANTAGES
1. Three-Stage Sampling	Irrelevant	Irrelevant
2. Collapsing of Grades to Two	To the degree that specific grades actually covered by Title I programs can be sampled, the policy implications within districts will be addressed.	Because there is variance across districts in grades covered, the general evaluation of policy alternatives will be limited.
3. Making the Longitudinal Study Unit Grades Within Schools Rather Than the Students	Policy implications with regard to what teachers do within selected grades will be easier to address	The impact of policies necessarily entertained with Title I—e.g., desegregation, ESAA, tracking—will be extremely difficult to address
4. Selecting Classroom Teachers and Specialists Only as Linked to Sampled Students	Irrelevant	Ability to assess programmatic effects of reallocation will be constrained.
5. Asking Information From Classroom Teachers and Specialists Referenced to Sampled Students and Not to Aggregates	Irrelevant	Ability to assess programmatic effects of reallocation will be constrained.
6. Expanding the Classroom Activities Log and Contracting the Information Asked of Classroom Teachers and Specialists	We will know what services and resources are delivered to what specific types of children.	We will not know the distribution of services across children. We will be limited in our ability to assess the degree to which supplainting and comparability regulations are followed.
7. Redefining Specialists to Include All Persons Providing Reading and Math Instruction Including Aides, Para-professionals, Parents and Other Students, etc.	Irrelevant	Irrelevant
8. Limiting the Scope of the Parent [illegible] Interview	Irrelevant	We will be severely limited in our ability to distinguish services received by children from different income groups.
9. Using District and Principal Data to Describe Service Delivery By Funding Source As Well As Numbers and Characteristics of Students Served	Irrelevant	We will not be able to independently assess the accuracy of public data and published reports.

TABLE A-2

MAJOR SCIENTIFIC ADVANTAGES AND DISADVANTAGES OF NIE PROPOSED MODIFICATIONS

PROPOSED MODIFICATIONS	MAJOR ADVANTAGES	MAJOR DISADVANTAGES
1. Three-Stage Sampling	Increased precision of estimates	Irrelevant
2. Collapsing of Grades to Two	Increased precision within grades sampled	Generalizability to grades not sampled Vulnerable to nesting of services Reduced face validity
3. Making the Longitudinal Study Unit Grades Within Schools Rather Than the Students	Larger effective sample size, operational feasibility enhanced	Necessitates strong uniformity assumptions Trebles parent sample Vulnerable to exogeneous factors Can't generalize to students
4. Selecting Classroom Teachers and Specialists Only as Linked to Sampled Students	Empirical linking of services to student characteristics Reduction in specialist sample	Reduced information on scope of services May not be able to estimate Title I services provision
5. Asking Information from Classroom Teachers and Specialists Referenced to Sampled Students and Not to Aggregates	Empirical linking of services and student characteristics Reduction in specialist sample	Reduced information on scope of services May not be able to estimate Title I services provision
6. Expanding the Classroom Activities Log and Contracting the Information Asked of Classroom Teachers and Specialists	Increased micro data on students	Feasibility? Data completeness and quality?
7. Redefining Specialists to Include All Persons Providing Reading and Math Instruction Including Aides, Para-professionals, Parents and Other Students, etc.	Additional perspective Increased micro data on students	Feasibility and knowledgeability of respondents? Data consistency, completeness and quality?
8. Limiting the Scope of the Parent Interview	Reduced effort	Dependence on less accurate sources Data linking
9. Using District and Principal Data to Describe Service Delivery By Funding Source As Well As Numbers and Characteristics of Students Served	Efficiency?	Severe data risks--missing, inconsistent, more comparable Less able to generalize Less able to link data Requires extensive cleaning coding, and modeling

TABLE A-3

MAJOR ADVANTAGES AND DISADVANTAGES OF NIE PROPOSED MODIFICATION WITH REGARD TO RISKS OF MISSING INFORMATION AND RESPONDENT ALIENATION

Proposed Modifications	Respondent Burden		Risk of Information not being Available from Source	
	ADVANTAGE	DISADVANTAGE	ADVANTAGE	DISADVANTAGE
#1 - Three-Stage Sampling	Irrelevant	Irrelevant	Irrelevant	Irrelevant
#2 - Collapsing Grades Covered to Two	Irrelevant	Irrelevant	Irrelevant	Irrelevant
#3 - Making the Longitudinal Study Unit Grades Within Schools Rather than the Students	Irrelevant	Irrelevant	Irrelevant	Irrelevant
#4 - Selecting Classroom Teachers and Specialists Only as Linked to Sample Students	Irrelevant	Irrelevant	Irrelevant	Irrelevant
#5 - Asking Information from Classroom Teachers and Specialists Referenced to Sampled Students	Irrelevant	At a minimum doubling the number of classroom activity logs a teacher is ordered to complete For specialists, possibly enormous increases-perhaps to ten forms Two classroom activity logs may be too great a respondent burden	Irrelevant	Irrelevant
#6 - Expanding the Classroom Activities Log and Contracting the Information Asked of Classroom Teachers and Specialists	Irrelevant	Current version of classroom activities log strains the limit of what can be asked of teachers in one day Requesting teachers to fill out a log for more than one student may make cooperation unlikely Added questions will cause even greater problems	Irrelevant	Irrelevant
#7 - Redefining Specialists to Include All Persons Providing Reading and Math Instruction Including Aides, Para-Professionals, Parents and Other Volunteers, Older Students, etc.	Irrelevant	Considerably increased district-wide	Irrelevant	No current knowledge of information known to potential new respondents
#8 - Contracting Scope of the Parent	Respondent burden decreases for parents under most options	Respondent burden probably increases for those furnishing SES data	Irrelevant	SES may be difficult to obtain through sources other than parents. SES data gathered other than through parents may be unreliable Data formats will vary across school districts
#9 - Using District and Principal Data to Describe Service Delivery by Funding Source As Well As Numbers and Characteristics of Students Served	Irrelevant	Very large burden on principal's office	Irrelevant	Data may not exist in school records. Data may not be accurate in School records. Data will not be consistent across districts

TABLE A -4a
SUMMARY OF
MAJOR ADVANTAGES OF NIE PROPOSED
DESIGN MODIFICATIONS

Proposed Modifications	ADVANTAGES OF PROPOSED MODIFICATIONS			
	Cost Implications	Policy Scope	Scientific Validity/Reliability	Risk: No Information And/Or Respondent Alienation
1. Three-Stage Sampling	Irrelevant	Irrelevant	Increased precision of estimates	Irrelevant
2. Collapsing of Grades to Two	Irrelevant	To the degree that specific grades actually covered by Title I programs can be sampled, the policy implications within districts will be addressed.	Increased precision within grades sampled	Irrelevant
3. Making the Longitudinal Study Unit Grades Within Schools Rather Than the Students	Currently Unknown	Policy implications with regard to what teachers do within selected grades will be easier to address.	Larger effective sample size, operational feasibility enhanced.	Irrelevant
4. Selecting Classroom Teachers and Specialists Only as Linked to Sampled Students	Slightly Reduced Cost	Irrelevant	Empirical linking of services to student characteristics.	Irrelevant
5. Asking Information from Classroom Teachers and Specialists Referenced to Sampled Students and Not to Aggregates	Slightly Reduced Cost	Irrelevant	Empirical linking of services to student characteristics.	Irrelevant
6. Expanding the Classroom Activities Log and Contracting the Information Asked of Classroom Teachers and Specialists	Irrelevant	We will know what services and resources are delivered to what specific types of children.	Increased micro data on students	Irrelevant
7. Redefining Specialists to Include All Persons Providing Reading and Math Insturction Including Aides, Paraprofessionals, Parents and Other Students, etc.	Irrelevant	Irrelevant	Additional perspective Increased micro data on students	Irrelevant
8. Limiting the Scope of the Parent Interview	Reduces Costs	Irrelevant	Reduced effort	Per parent burden decreased
9. Using District and Principal Data to Describe Service Delivery By Funding Source As Well As Numbers and Characteristics of Students Served	Reduction in costs if no principal reimbursement needed	Irrelevant	Efficiency?	Irrelevant

TABLE A-4b

SUMMARY OF
MAJOR DISADVANTAGES OF THE PROPOSED
DESIGN MODIFICATIONS WITH AAI RECOMMENDATIONS

Proposed Modifications	DISADVANTAGES OF PROPOSED MODIFICATIONS				Recommendations
	Cost Implications	Policy Scope	Scientific Validity/Reliability	Risk: No Information And/Or Respondent Alienation	
Three-Stage Sampling	Increase Costs	Irrelevant	Irrelevant	Irrelevant	This modification could be accepted. Specific arguments on sampling rules would have to be reached.
Collapsing of Grades to Two	Increase Costs	Because there is variance across districts in grades covered, the general evaluation of policy alternatives will be limited.	Generalizability to grades not sampled; Vulnerable to nesting of services; Reduced face validity	Irrelevant	This modification could also be accepted, but would require more data to assess.
Making the Longitudinal Study Unit Grades Within Schools Rather Than the Students	Currently Unknown	The impact of policies necessarily entertained with Title I—e.g. desegregation, ESAA, tracking—will be extremely difficult to address.	Necessitates strong uniformity assumptions; Trebles parent sample; Vulnerable to exogenous factors; Can't generalize to students	Irrelevant	We are very hesitant about this modification.
4. Selecting Classroom Teachers and Specialists Only as Linked to Sampled Students	Irrelevant	Ability to assess programmatic effects of reallocation will be constrained.	Reduced information on scope of services; May not be able to estimate Title I services provision	Irrelevant	We do not recommend this modification.
5. Asking Information from Classroom Teachers and Specialists Referenced to Sampled Students and Not to Aggregates	Irrevelant	Ability to assess programmatic effects of reallocation will be constrained	Reduced information on scope of services; May not be able to estimate Title I services provision	Increases teacher and specialist burden	We do not recommend this modification.
Expanding the Classroom Activities Log and Contracting the Information Asked of Classroom Teachers and Specialists	Slightly Increases Costs	We will not know the distribution of services across children. We will be limited in our ability to assess the degree to which supplanting and comparability regulations are followed.	Feasibility? Data completeness and quality?	May exceed teacher's ability to respond	We do not recommend this recommendation.
Redifining Specialists to Include All Persons Providing Reading and Math Instruction Including Aides, Para-professionals, Parents and Other Students, etc.	Increases Cost	Irrelevant	Feasibility and knowledgeability of respondents? Data consistency, completeness and quality?	Large increase in number of respondents	We do not recommend this modification.
Limiting the Scope of the Parent Interview	Irrelevant	We will be severely limited in our ability to distinguish services received by children from different income groups	Dependence on less accurate sources; Data linking	High risk of data unavailability or respondent overload	We are hesitant about this modification. Resolution depends on the content and mode of data collection.
Using District and Principal Data to Describe Service Delivery By Funding Source As Well As Numbers and Characteristics of Students Served	Increase in costs if principal reimbursement needed	We will not be able to independently assess the accuracy of public data and published reports.	Severe data risks—missing, inconsistent more comparable; Less able to generalize; Less able to link data Requires extensive cleaning, coding, and modeling	Increase in principal load and possible loss of data	We do not recommend this modification.

Title I services. Each will be selected randomly. In classrooms where either category is empty, we will select two students within one stratum or the other. In schools which do not receive Title I support, we will randomly select two students.

2. Sampling Students in Only Two Grades. We agreed that we would collapse the number of grades covered to two grades. We discussed a variety of issues related to which specific grades would be covered. The consensus was that it would be better to include adjacent grades than to study grades at opposite ends of the elementary group. Grades 3 and 4 were selected.

3. Making the Longitudinal Study Unit Grades Within Schools Rather than Students. We agreed to adopt this modification. We select two grades within the sampled schools, and we cover all classrooms within each of those two grades by questioning classroom teachers and by sampling two students from each classroom.

4. Selecting Classroom Teachers and Specialists Only as Linked to Sample Students. We agreed to select all classroom teachers and specialists who are linked to the sampled students. We also will add supplementary samples in order adequately to represent the services delivered by specialists in Title I and other compensatory programs. We have added the instructional schedule module for specialists in order to clarify the procedure for selecting class or instructional periods about which information should be asked.

5. Asking Information from Classroom Teachers and Specialists Referenced to Sample Students. Data from aggregate units--classes and smaller groups--will be linked to sample students. The reference group for questions regarding the instructional program, however, will be the aggregate unit, not the student. Additionally, we agreed to add a Classroom Roster which describes the characteristics of students receiving compensatory services and students not receiving compensatory services.

These characteristics are completely cross-referenced through the student I.D. number.

6. Expanding the Classroom Activities Log from a Simple to a Complex Instrument, and Contracting the Information Asked of Classroom Teachers and Specialists in Questionnaire Format. We agreed not to expand the Classroom Activities Log. It was decided that the Classroom Activities Log would be modified slightly providing a little additional information. The aggregate information asked of classroom teachers and specialists has been reorganized, but not greatly contracted. In the reorganized version, questions which describe instructional services refer to the specific groups in which sample students are instructed. Fewer questions are asked, but the module is repeated when teachers have both Title I and non-Title I students in their classes or teach more than one class in which a sample student participates.

7. Redefining Specialists to Include All Persons Providing Language Arts and Math Instruction Including Aides, Para-professionals, Parents and Other Volunteers, Older Students, Etc. It was agreed that we would not include all persons providing language arts and math instruction in our definition of specialists. Specialists will be defined as certified teachers specializing in a single subject or family of subjects. We will obtain information on the activities of aides, para-professionals, parents and other volunteers, older students, etc. from other data sources. We will sample these persons in order to describe instructional activity only when they are the primary providers of instruction to sample students.

8. Contracting the Scope of the Parent Interview. In response to various suggestions for shortening the Parent Interview, we agreed to contract its scope. The Parent Interview will be administered face-to-face. We consider this interview necessary to the objective description of community reaction to the Demonstration, as required by our research contract.

Parents will be linked to Title I sample students so that the interview will provide precise estimates of the socio-economic characteristics of student recipients of Title I services.

9. Using District and Principal Data to Describe Service Delivery by Funding Source, as well as Numbers and Characteristics of Students Served. We agreed that some of the data pertaining to student characteristics by funding source would be gathered at the group level. If data were not available for groups, information would be gathered within schools from the principals or their staffs. Unduplicated counts and characteristics of students served by Title I will be obtained for the third and fourth grades from classroom teachers.

APPENDIX B

INSTRUMENTATION

There are three generic sources of data to be used for these analyses:

1. Formal questionnaires, interview schedules, and record forms developed by AAI for use in the study of the Demonstration Districts,
2. Informal checklists and interview outlines, and
3. Published documents.

The formal instruments will provide the major portion of the data. There are 14 formal instruments in all. Table summarizes these instruments by format, sample addressed, level of data collected, purpose, and primary variable group as referenced to the analytic model. Table B-2 further details the variables in each variable group by data source and indicates the corresponding item numbers of each formal instrument.[1]

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[1] The numbers in this Table are based on final versions of the Classroom Roster, Instructional Schedule, Classroom Activities Log (CAL), Principal Questionnaire, Student School Record Information Form, and the OMB submission versions of all other instruments.

TABLE B-1

FORMAT, SAMPLE, LEVEL OF DATA, PURPOSES, AND PRIMARY VARIABLE GROUPS FOR FORMAL INSTRUMENT DATA SOURCES

DATA SOURCE	FORMAT	SAMPLE	LEVEL OF DATA*	PRIMARY OBJECTIVE	SECONDARY OBJECTIVE	VARIABLE GROUP(S)
Principal Questionnaire: Form I	Self-Administered Questionnaire	All Elementary School Principals in Demonstration Districts	District School	To obtain a thorough description of the compensatory program(s) operating in each school	To obtain a description of school and facilities professional staff, and other contextual characteristics, as well as professional response to the Demonstration	A, D, E
Principal Questionnaire: Title I Supplement	Self-Administered Questionnaire	Principals of all elementary schools currently served by Title I	District School	To obtain a thorough description of the Title I services provided in each school	To obtain information regarding criteria and procedures used in determining Title I eligibility as well as information about planning	B, C, D
Principal Questionnaire: State Compensatory	Self-Administered Questionnaire	Principals of all elementary schools currently served by ISPCE	District School	To obtain a thorough description of the state-funded compensatory services provided in each school	To obtain information regarding criteria and procedures used in selecting students for state-funded compensatory programs, as well as information about planning	B, C, D
Teacher/Reading and Math Specialist Questionnaire Form I (Background)	Self-Administered Questionnaire	All sample teachers and specialists	Teacher/Specialist	To obtain information on staff opinions regarding compensatory education	To obtain information on staff background characteristics and opinions regarding compensatory education	A, D, E
Regular Program Description Modules Forms IV and IVA	Self-Administered Questionnaire	Regular language arts and mathematics teachers of sample students	Instructional Unit	To obtain a description of the regular reading and mathematics instruction provided to sample students		E
Compensatory Program Description Modules Form III	Self-Administered Questionnaire	All compensatory language arts and mathematics specialists; providers of compensatory language arts and mathematics to sample students	Instructional Unit	To obtain a thorough description of the compensatory reading and mathematics instruction provided to sample students	To obtain information on the services delivered by compensatory language arts and mathematics specialists	D, E
Classroom Activities Log (CAL)	Self-Administered Record Form	All sample students	Student	To obtain an estimate of the actual amount of instruction received by each student group	To obtain an estimate of the actual instructional setting in which students receive instruction	E
Classroom Roster	Self-Administered Record Form	All homeroom (primary) teachers in third and fourth grade classrooms in sample schools	Student	To obtain an unduplicated estimate of the characteristics of students participating in Title I and other compensatory programs	To facilitate student sampling procedures	F
Instructional Schedule	Self-Administered Record Form	All compensatory language arts and mathematics specialists	Specialist	To estimate the amount of time specialists spend in direct instruction in various programs	To facilitate specialist sampling procedures and form distribution	D
Student School Record Information Form (SSRIF)	Self-Administered Record Form	All sample students	Student	To obtain standardized achievement test scores on sampled students as well as an unduplicated count of services received from Title I and other compensatory programs	To obtain information on other student characteristics and amount of support services	E, F
Parent Interview	Face-to-Face Interview	All parents of sampled Title I students	Parent	To estimate the socio-economic characteristics of Title I students	To obtain information on the involvement, knowledge, and preferences of Title I parents	F, G
Parent Advisory Council Interview	Face-to-Face Interview	Members of Parent Advisory Council	PAC	To obtain information on involvement, knowledge and preferences of PAC members	To obtain information on structure and organization of PACs	G
Citizen Telephone Survey	Telephone Interview	Local Citizens	Citizen	To determine if the changes in allocation criteria produce a reaction in the general community	—	G

TABLE 3-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

		DATA SOURCES																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	VARIABLE GROUP/ VARIABLES Variable Group A The Setting for the Demonstration	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
STATE LEVEL	• complexity - no. staff														X	X						
	- differentiation of staff														X	X						
	• centralization of decision making within SEA														X	X						
	• formalization of Title I regulations														X	X						
	• mechanisms for evaluating Title I programs														X	X						
	• degree of supervision of SEA's														X	X						
DISTRICT LEVEL	• complexity														X	X						
	- no. Title I staff														X	X		X				
	- duties & resp. of Title I staff														X	X						
	• degree of formalization														X	X						
	• degree of centralization of district decision making														X	X						

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS FOR EACH VARIABLE IN THE ANALYSIS, ORGANIZED BY VARIABLE GROUP

		DATA SOURCES																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	VARIABLE GROUP/ VARIABLES Variable Group A (continued)	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	LEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
	• degree of public controversy over social & school related issues															X						
	• demographic characteristics																X					
SCHOOL LEVEL Physical Characteristics and Facilities	• age of building	15																				
	• total no. classrooms & no. classrooms utilized for instruct. purposes	16																				
	• no. open classrooms & no. students enrolled	17																				
	• existence of various facilities	18 20 22																				
	• existence of library & no. volumes	21																				
	• grade span & enrollment by grade	19																				
	• classroom assignment procedures in regular instructional program	23 24																				

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

	VARIABLE GROUP/ VARIABLES Variable Group A (continued)	DATA SOURCES																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
		Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	[illegible]ding & Math [illegible]s Questionnaire: [illegible] (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
PRINCIPAL CHARACTERISTICS	- educational attainment	30																				
	- professional experience	31 35																				
	• principal opinions - program goals	25																				
	- program effectiveness	26 28																				
	- opinions re: demon options	29																				
	• staff in fulltime equivalents																	X				
	• staff pupil ratio																	X				
CHAR. OF STUDENT POPULATION																					X	
	- ethnicity																				X	
	- SES																				X	
CHARACTERISTICS OF STAFF	• activities & resp.				1,2,7																	
	• educational experience				3-6																	

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

	DATA SOURCES																				
	FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
VARIABLE GROUP/ VARIABLES Variable Group A (continued)	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
• educational background				8																	
• attendence & participation in district wide & school planning meetings				9-10																	

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

VARIABLE GROUP/ VARIABLES	DATA SOURCES																				
	FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
Variable Group D Application/Planning	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
APPLICATION PROCESS:																					
• the criteria used by the SEAs in selecting dist. to be notified of the Demonstration,														X							
• the criteria by which the SEAs determined which of the school dist. applications they received would be forwarded to NIE,														X							
• any modifications made by SEAs prior to forwarding the proposals to NIE,														X							
• the amount of time spent by SEA staff with LEAs in activities related to their application and selection as potential Demonstration districts, and														X							
• the time interval which passed between SEA's first awareness of the Demonstration project (receipt of the RFP) and														X							

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

VARIABLE GROUP/ VARIABLES	DATA SOURCES																				
	FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
Variable Group B Application/Planning (continued)	Principal Questionnaire: School's Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form C (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census' Fourth Count Data	LEA Title I Comparability Reports	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
its forwarding of applications to NIE.																					
• the way in which the districts initially learned of the Demonstration project.															X						
• the reasons which prompted the dist. to apply.															X						
• the participants in district level meetings held to consider the application.															X						
• the nature of the dist. level meetings held to consider the application, including the number of meetings held and the substance of the meeting held, and															X						
• identification of key decision makers in the application process															X						

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

PLANNING PROCESS:

	DATA SOURCES																				
	FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
VARIABLE GROUP/ VARIABLES Variable Group B (continued)	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Notes	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	All Project Files
• extent of involvement of SEA staff in providing technical assistance and opinions on policy opts.														X	X					X	
• participants involved in planning meetings, such as central office administrators, principals, teachers, parents and students.														X	X					X	
• nature of planning meetings, including number of meetings held and the substance of the meeting held.														X	X					X	
• identification of key decision-makers in the planning process, and														X	X					X	
• time involved in the planning process														X	X					X	

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

	VARIABLE GROUP/ VARIABLES	DATA SOURCES																					
		FORMAL INSTRUMENTS														INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	Variable Group C Allocation Policy	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log, (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Reports	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
DETERMINATION OF ELIGIBILITY	• no. students eligible		1																			
	• no. students served		8																			
	• eligibility criteria		3,4,5 10-12																			
	• centralization of the decision making process		2,6,7 13,14																			
DISTRIBUTION OF RESOURCES	• distribution across schools																				X	
	• distribution of students within schools																				X	
	• overall distribution of students																				X	

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

		DATA SOURCES																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	VARIABLE GROUP/ VARIABLES Variable Group D Program Delivery	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site, Interviews	On-Site Observations	State, District and School Records	AAI Project Files
DISTRICT LEVEL DESCRIPTIONS	• goals and objectives																		X	X	X	X
	• population served																		X	X	X	X
	• program activities																		X	X	X	X
	• staffing																		X		X	X
	• staff training																		X		X	X
	• instruction																		X	X	X	X
	• parental involvement																		X	X	X	X
CROSS-DISTRICT DESCRIPTIONS	• types of staff who provide services																		X	X	X	X
	• specialists vs. classroom teachers																		X	X	X	X
	• content of services: wide vs. narrow range of services																		X	X	X	X
	• instructional patterns: in-class vs. out-of-class																		X	X	X	X

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS FOR EACH VARIABLE IN THE ANALYSIS, ORGANIZED BY VARIABLE GROUP

SERVICES DELIVERED BY SPECIALIST

	DATA SOURCES																				
	FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
VARIABLE GROUP/ VARIABLES Variable Group D (continued)	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
• number of hours per week employed by funding source									1												
• proportion of time spent instruction by funding source									3												
• proportion of time spent on other tasks by funding source									3												
• no. instructional periods per week									1-7 PartA												
• average length of instructional period									3B												
• content of instruction									3C												
• size of group taught									3D												
• grade level(s) of students taught									3E												
• role of specialist in instruction									3F												
• person who provides inst.									1,2												
• location of instruction									6,8												

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS FOR EACH VARIABLE IN THE ANALYSIS, ORGANIZED BY VARIABLE GROUP

VARIABLE GROUP/ VARIABLES	DATA SOURCES																					
	FORMAL INSTRUMENTS														INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
Variable Group D (continued)																						
• no. of children meeting together						cover																
• amount of instruction per week						3																
• length of time in program						4																
• details of teachers lesson plans						9																
• means of assessing students performance at the beginning of the year						7																
• existence of performance objectives						12-13																
• basis for assigning lessons						11																
• instruction groupings						10																
• use of materials						17-19																
• means of assessing students progress						14-16 20																

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

	VARIABLE GROUP/ VARIABLES	DATA SOURCES																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	Variable Group E Student Experiences	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
PROGRAM ACTIVITIES BY FUNDING SOURCES												10 A&B										
OBSERVED STUDENT EXPERIENCES:	• content area of instruction							Content 1-13														
	• size of instructional grouping							Group size														
	• person providing instruction							Adult Involv. 1-9														
	• whether instruc. is compensatory or bilinqual																					
	• bilinqual or ESL educ.							*1														
	• no. field trips taken										4-7											
											8											
SETTING OF INSTRUCTION:	• person who provides instruction					1,2	1,2															
	• location of instruction						6,8															
	• no. children meeting together					cover sheet	cover sheet															
	• heterogeneity of grouping with respect to Title I																		X			

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

SUPPORT SERVICES:

VARIABLE GROUP/ VARIABLES	DATA SOURCES																				
	FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
Variable Group E (continued)	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
• amount of instruction per week					3	3															
• length of time in program						4															
• basis for assigning lessons					8	11															
• instructional groupings					7	10															
• use of materials					14-16	17-19															
• means of assessing students progress					11-13	14-16															
• type of service & no. times received										11 A&B											
• type of specialist & no. times seen										11 A&B											
• reason for seeing specialist										11C											

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS FOR EACH VARIABLE IN THE ANALYSIS, ORGANIZED BY VARIABLE GROUP

		DATA SOURCES																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	VARIABLE GROUP/ VARIABLES Variable Group F Student Characteristics	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
STUDENT INFORMATION	• sex								2													
	• ethnicity								3													
	• reading achievement level								4													
	• free lunch								5													
	• reading achievement level										12											
	• math achievement level										12											
	• age										1											
	• Aid to Family with Dependent Children (AFDC) status										2											
	• first language other than English										3											
FAMILY BACKGROUND INFORMATION	• income											40										
	• educational background											28–32										
	• transfer payments rec'd. and public assistance											39										
	• employment status											34–38										

TABLE B-2

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

		D A T A S O U R C E S																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	VARIABLE GROUP/ VARIABLES Variable Group H Community Response	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
PARENTAL RESPONSE: CHARACTERISTICS OF FAMILIES RECEIVING TITLE I SERVICES	• employment status											34-38										
	• educational attainment											28-32										
	• family income											39-40										
	• geographic mobility											25-27										
PARENTAL PERCEPTION OF SPECIAL SERVICES	• services provided for child											3A+4A										
	• awareness of existence of special services											3B+4B										
	• awareness of Title I funding for services											3C+4C										
	• enrollment of other children											7-8										
PARENTAL PREFERENCES	• goals of compensatory education											9										
	• Demonstration policy options											23-24										
PARENTAL KNOWLEDGE OF SPECIAL SERVICES	• knowledge of federally funded comp. programs											13										

TABLE B-2, cont'd.

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

		DATA SOURCES																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	VARIABLE GROUP/ VARIABLES Variable Group H Community Response (Cont'd.)	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
PARENTAL KNOWLEDGE OF SPECIAL SERVICES (Cont'd.)	• knowledge of Title I											14–15										
	• knowledge of Title I funding											16										
	• knowledge of Title I selection process											20–21										
COMMUNITY INFORMATION SOURCES	• mass media											17										
	• discussion among friends											18										
	• information from schools											19										
PARENTAL PARTICIPATION IN SCHOOL ACTIVITIES	• attendance at parent meetings											22A										
	• membership in parent organizations											22B										
	• offices held											22C										
	• frequency of visits to school											11 12A+ B										
	• working as aide in classroom											12C										

TABLE B-2, cont'd.

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

	VARIABLE GROUP/ VARIABLES Variable Group H Community Response (Cont'd.)	DATA SOURCES																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
		Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	SEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
PAC RESPONSE: PARTICIPATION IN SCHOOL ACTIVITIES	• participation as paid aides												1-22									
	• participation in formal training sessions												2-4									
	• frequency of school visits												20-21									
PARTICIPATION IN PLANNING	• participation in district level planning meetings												6-12									
PAC ORGANIZATION	• main purposes of PAC												14									
	• PAC membership												16-19									
COMMUNITY INFORMATION SOURCES	• sources of information re Title I												23-25									
CHARACTERISTICS OF PAC MEMBERS	• family and community background												28-31									
	• educational background												32-36									
	• employment & income												37-43									

TABLE B-2, cont'd.

SUMMARY OF DATA SOURCES AND ITEM NUMBERS
FOR EACH VARIABLE IN THE ANALYSIS,
ORGANIZED BY VARIABLE GROUP

		DATA SOURCES																				
		FORMAL INSTRUMENTS													INFORMAL INSTRUMENTS AND REPORTS				OTHER DATA SOURCES			
	VARIABLE GROUP/ VARIABLES Variable Group H Community Response (Cont'd.)	Principal Questionnaire: School & Background Info.	Principal Questionnaire: Title I Supplement	Principal Questionnaire: State Compensatory	Teacher/Reading & Math Specialist Questionnaire: Form I (Background)	Teacher/Reading & Math Specialist Questionnaire: Form IV & IVA	Teacher/Reading & Math Specialist Questionnaire: Form III	Classroom Activities Log (CAL)	Classroom Roster	Instructional Schedule	Student School Record Information Form (SSRIF)	Parent Interview	Parent Advisory Council Interview (PAC)	Citizens' Telephone Survey	LEA Title I Interviews	District Interviews and Observations	U. S. Census - Fourth Count Data	ESEA Title I Comparability Report	Other On-Site Interviews	On-Site Observations	State, District and School Records	AAI Project Files
CHARACTERISTICS OF PAC MEMBERS (Cont'd.)	• race and ethnicity												IO 1 IO2									
	• language												IO 3									
CITIZENS SURVEY	• family informa. & attendence of children in community schools													1-4								
	• knowledge of local school													5-6								
	• sources of information re Title I & the schools													7, 12								
	• knowledge of Title I & other compensatory programs													8- 11								

APPENDIX C

POSSIBLE PROBLEMS IN DESIGN IMPLEMENTATION AND IMPLICATIONS THEREOF

1.0 INTRODUCTION

The purpose of this Appendix is to briefly explore certain key areas that loom as potential problems for the overall study and in particular, the sampling plan. All research designs face a series of potential problems prior to their implementation. The temptation is to minimize or ignore such problems.

In the case of this study, it was deemed appropriate to explicate these problems during the early stages of the study. By proceeding in this manner, all parties can thus be aware of at least some of the major factors affecting successful implementation of the design.

The following sections are written as statements of potential problems. The severity and probability of each problem will be estimated where possible.

Before beginning the discussion of the specific problems, it should be emphasized that the acknowledgement of major potential problems during the implementation phase of the design is not a negative comment on the design itself. The design outlined in this data collection and analysis plan is capable of achieving the objectives of the study. However, no research design, save in the case of one conducted in the presence of perfect knowledge or under laboratory conditions, does not face a series of potential problems. The perfect *a priori* research design in the area of educational research has yet to be discovered.

2.0 POTENTIAL PROBLEMS

2.1 School District Attrition

School district attrition can effect this study in three ways:

- By seriously effecting the adequacy of the sample size in certain key design cells,
- By effecting the regional representation, and,
- By the loss of districts with particular characteristics in programmatic or pupil characteristics which would decrease the ability of the study to address certain objectives.

Since it is impossible to state with certainty which (if any) of the sixteen districts will successfully enter the implementation years, the exact magnitude of school district attrition problems is impossible to estimate. Similarly, since there are several thousand unique combinations of sixteen items taken one through sixteen at a time, it is impossible to describe the effect of all possible combinations of the sixteen districts that might occur. For this reason, the magnitude of attrition problems can only be estimated at a general level.

2.1.1 Effect of School District Attrition on Sample Size

As Table 3-9 in Chapter 3 indicates, the school districts vary considerably in terms of their contribution to the overall sample size. In particular, certain design cells, such as Type Two schools, are estimated to come from the largest three of the sixteen districts. Hence, were the attrition of districts to occur in these three largest districts, the power of statistical comparisons between the design cells would decrease sharply. For example, the power of the test for the comparison of two equal size cell means for the situations where alpha equals .05, d = .02, to .61 decreases from .88 for n = 500 when the sample size n decreases to 250. (See Table 3-10.)

2.1.2 Effect of School District Attrition on Regional Representation

Although there are different ways to categorize all the regions in the United States, it would appear that the major regions of the United States are represented (by the sixteen Demonstration school districts) in the current study, with the possible exception of the northwestern United States. However, should there be school district attribiton, correlated with geographic location, major regional areas might not be represented in the data upon which the final conclusions of this study will be based.

Whether this particular possible effect of school district attrition is considered serious depends on the perception of the validity of research of this type being conducted in this study when regional variation is not represented. Although major educational studies have found signficiant variation between U.S. regions on various outcome and contact indicators, there is disagreement over the importance of regional representation in educational and policy research.

2.1.3 Possible Effects of School District Attrition on Pupil and Programmatic Representation

At this time, it is impossible to say with certainty what the distribution of programmatic characteristics across districts is. However, it is reasonable to expect that certain important programmatic variables, such as the degree of curriculum individualization, will vary considerably across the sixteen districts. In addition, information now in hand on the overall pupil characteristics in the sixteen districts, and certain suggestive information on the characteristics of pupils receiving Title I services, suggest that pupil characteristics differ significantly among the sixteen districts. As was the case with the prior possible effects of school district attrition, it is impractical to discuss the myriad of possibilities that exist.

2.2 Errors in Case Sampling Information

There are two types of errors in key sampling information which, if current estimates were signficantly inaccurate, could present serious problems for the implementation of the design and development plan outlined in this report:

- First, if the Type Two schools identified by the districts proved not to be those schools included in the demonstration, in Year Two, and,
- Secondly, if within a typical Title I school (Type One) significantly less than 80% of the third and fourth grade classrooms did not contain Title I pupils, our sampling design assumption would be violated.

The significance and magnitude of the impact of errors of these two types on the reliability and validity of the study is again difficult to precisely estimate. However, the effects of deviation from the assumption of 80% of the classrooms in Title I schools containing Title I pupils, is straightforward. For example, if only 60% of the sampled Title I school classrooms were to contain Title I pupils, there would be approximately 802 as opposed to 1,070 Title I students within the first year sample. Considering the power associated with comparisons of sampled cells as illustrated in Table 3-10, deterioration of cell sizes will effectively reduce the number of sites within which intra-site comparisons between cells will have significant statistical power. Errors of this type in the key sampling information, have the net effect of, in the extreme, eliminating certain key design cells from consideration. It should be emphasized that the conceptsof "reasonable" and "statistical" power are relative rather than absolute terms.

The evaluative judgements, such as, "reduces the number of sites within which intra-site comparisons can be made", reflect those of the study staff that are by no means absolute in nature.

The second type of error in key sampling information effects the number of Type Two schools and is potentially serious in that it may jeopardize major policy implications of the study. The effect of the changes in allocation and concentration on the dependent measures, is primarily observed in those schools which entered the demonstration (i.e. Type Two schools). It is a reasonable statistical expectation, since nearly two-thirds of the schools in the sixteen school districts already receive Title I funds and substantial resource reallocation away from these schools is not too likely, the mean changes observed in Type One schools will be relatively small. As a consequence, the most reasonable expectation is that programmatic changes in those Type Two schools will be both substantively and statistically larger than changes observed in Type One or Type Three schools. Should the number of Type Two schools contained in the Year One sample be substantially less than those who actually enter the demonstration in Year Two, the statistical and substantive generalizations of the study could become significantly impaired. Should particular districts shift from those schools expected to participate in the demonstration to some set of non-sampled Type Three schools, it is conceivable that the majority of key demonstration schools in particular districts might not be sampled in Year One. Although the probability of this event is not deemed high at the time of this writing, the possibility cannot be precluded. Initial ambassadorial visits to the districts, subsequent telephone contacts, and various correspondence have continued to focus on updating sampling information. In cases of uncertainty, potential Type Two schools have been included in the Year One sample, in order to avoid this particular type of implementation problem.

2.3 Non-Response To Survey Questionnaires

The general effect of non-response is to increase the standard error of the estimate. Consequently, the reliability of study results decreases. The rate of decrease and the severity of absolute points along the non-response continuum, are a direct function of the size of total population, significance criterion, and desired effect size.

This complex set of interrelated contingencies defines, from a practical standpoint, the parameters surrounding an answer to the question of the effects of non-response on survey results. The definition of these generalities into operational statements of what response rates can be defined as the critical point beyond which particular aspects of the study design become marginal is impossible to define at this time. It is always judgmental. One could return to Table and define some particular point in the power curve as the critical value beyond which the results of the survey lack statistical credibility. However, these approaches disguise the basic value judgment implicit in defining the effects of non-response. Rather than engage in discussions of the estimation of these precise points, it would seem far more productive to discuss the implications of non-response in two general ways:

- First, the general conceptualization of non-response as being form and item specific, and,
- Secondly, the effects of non-response on the overall ability of the study to address certain key policy questions.

Generally, non-response will be reviewed as a property of individual items. If the record of an individual student is incomplete, the entire record will not be deleted. If the information on a particular item is present in 90% of all useable records, that information will be employed for analytic purposes.

This framework leads to consideration of non-response at various levels within the study's data. For example, Table E-1 contains the cell sample sizes at the school level, and the various observed rates for standard deviations of half-widths for five effect size values. As can be seen from this table, the effect of non-response is non-linear. For example, in the smaller sample sizes effects of non-response are more marked on the estimates. As sample size increase, the ratio reverses in favor of basic population size.

TABLE C-1

SUMMARY TABLE OF SAMPLE SIZES
FOR OBSERVED SCHOOL STRATA CELL POPULATION SIZES:
FOR HALF-WIDTHS OF ONE-QUARTER, ONE-THIRD, ONE-HALF,
THREE QUARTER AND ONE STANDARD DEVIATION

Cell Size	Standard Deviation Half-Widths				
	.25	.33	.50	.75	1.0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	2
4	4	4	4	3	3
5	5	5	4	3	3
6	6	6	5	4	3
9	8	8	6	4	3
10	9	8	7	5	3
11	10	9	7	5	3
13	11	10	8	5	4
17	14	12	9	6	4
18	15	13	9	6	4
20	16	13	9	6	4
22	17	14	10	6	4
24	18	15	10	6	4
25	18	15	10	6	4
27	19	16	11	6	4
31	21	17	11	6	4
34	23	18	11	6	4
48	28	21	13	7	4
49	28	21	13	7	4
54	30	22	13	7	4
66	33	24	13	7	4
71	34	25	14	7	4
81	36	26	14	7	4

APPENDIX D

DATA COLLECTION PROCEDURES, QUALITY CONTROL, AND CONFIDENTIALITY

1.0 DATA COLLECTION PROCEDURES

1.1 Organization of the Data Collection Staff

Data collection activities have been organized into technical operations and field operations, as shown in Figure D-1.

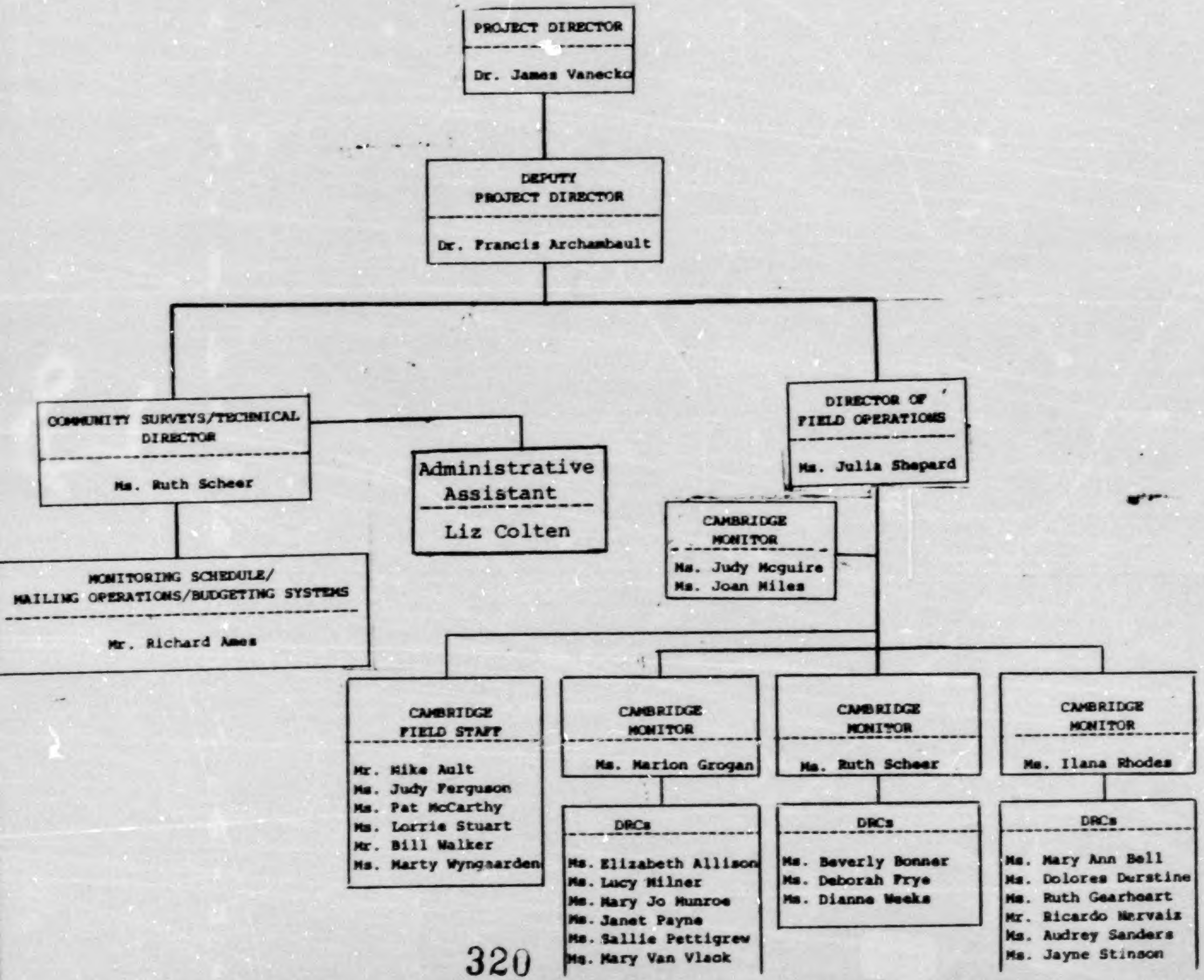
The responsibilities of the technical staff cover the distribution and receipt of all staff self-administered questionnaires including:

- Assigning ID numbers to all specialists, teachers, and principals identified as respondents;
- Designing, implementing, and updating a computerized mailing system which provides (1) address labels for mailings, (2) non-respondent lists, and (3) appropriate computerized letters, forms, and cover sheets as needed.
- Sampling students from classroom rosters and assigning appropriate ID numbers to these students;
- Designing procedures for the scheduling of CAL observation days;
- Editing for errors and missing information; and
- Quality control checking on forms sent out and returned.

The responsibilities of the field staff cover the monitoring and facilitating of all self-administered instruments including:

FIGURE D-1

ORGANIZATIONAL CHART FOR DATA COLLECTION ACTIVITIES


PROJECT DIRECTOR
Dr. James Vanecko
DEPUTY PROJECT DIRECTOR
Dr. Francis Archambault
COMMUNITY SURVEYS/TECHNICAL DIRECTOR
Ms. Ruth Scheer
Administrative Assistant
Liz Colten
DIRECTOR OF FIELD OPERATIONS
Ms. Julia Shepard
CAMBRIDGE MONITOR
Ms. Judy Mcguire
Ms. Joan Miles
MONITORING SCHEDULE/ MAILING OPERATIONS/BUDGETING SYSTEMS
Mr. Richard Ames
CAMBRIDGE FIELD STAFF
Mr. Mike Ault
Ms. Judy Ferguson
Ms. Pat McCarthy
Ms. Lorrie Stuart
Mr. Bill Walker
Ms. Marty Wyngaarden
CAMBRIDGE MONITOR
Ms. Marion Grogan
DRCs
Ms. Elizabeth Allison
Ms. Lucy Milner
Ms. Mary Jo Munroe
Ms. Janet Payne
Ms. Sallie Pettigrew
Ms. Mary Van Vlack
CAMBRIDGE MONITOR
Ms. Ruth Scheer
DRCs
Ms. Beverly Bonner
Ms. Deborah Frye
Ms. Dianne Weeks
CAMBRIDGE MONITOR
Ms. Ilana Rhodes
DRCs
Ms. Mary Ann Bell
Ms. Dolores Durstine
Ms. Ruth Gearhoart
Mr. Ricardo Mervaiz
Ms. Audrey Sanders
Ms. Jayne Stinson

- Distributing materials to on-site District Research Coordinators (DRC's);

- Following up non-respondents;

- Following up respondents when more than 5 percent of a given instrument has missing data or errors in reporting;

- Reporting changes in order to update the computerized mailing system.

1.2 Data Collection Flow

Figure D-2 traces the flow of formal instruments in the project, once their respective respondents are determined. Figure D-3 shows the specific dates when these instruments are administered.

1.2.1 Self-Administered Questionnaires

The following instruments are self-administered:

- Classroom Roster
- Instructional Schedule
- Classroom Activities Log (CAL)
- Principal Questionnaire
- Student School Record Information Form (SSRIF)

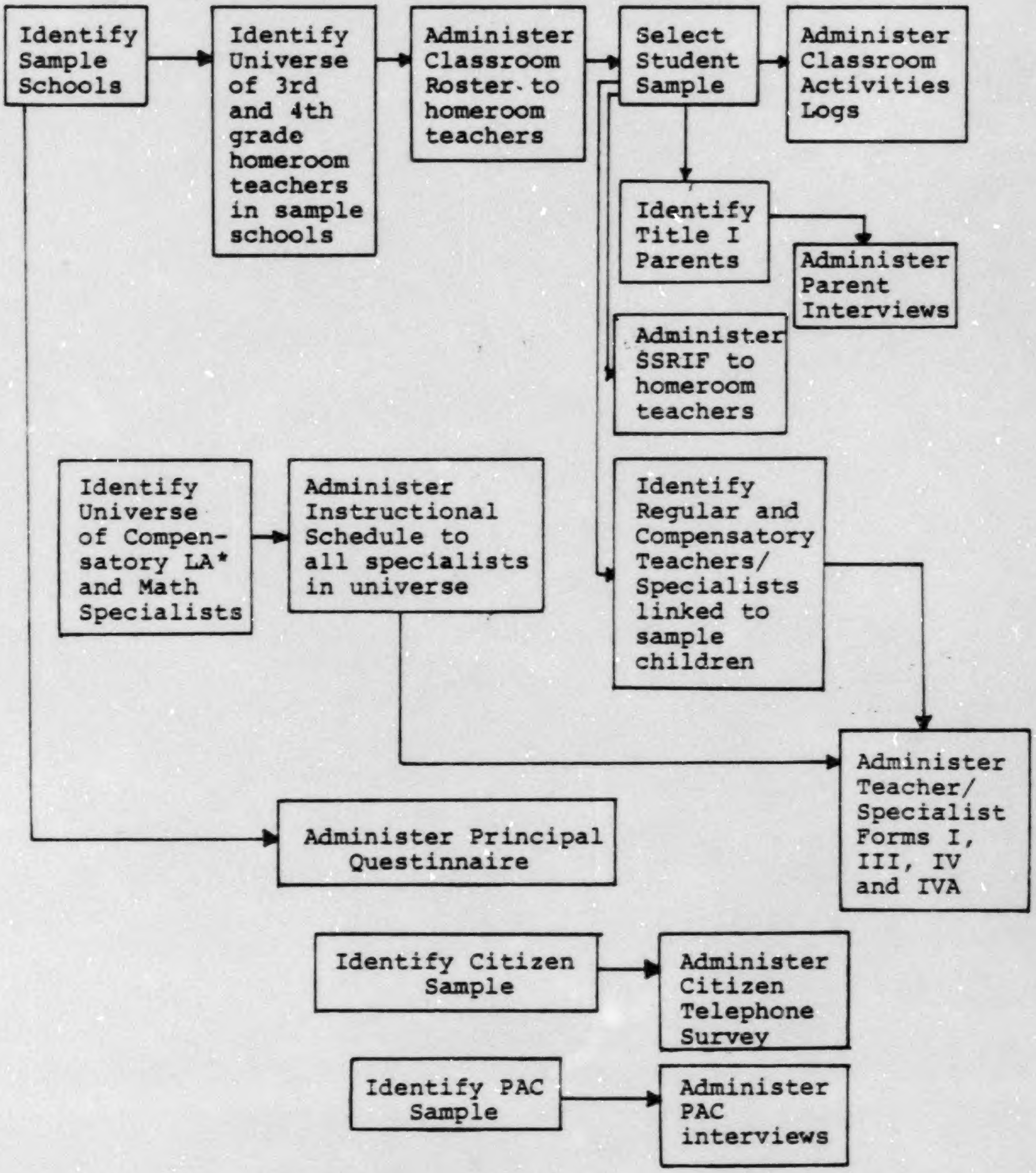
All of these instruments with the exception of the CAL are mailed directly to the appropriate respondents, and returned by the respondents directly to Abt. Each mailing consists of the following:

- General cover letter
- Confidentiality statement
- Instrument
- Return self-addressed envelope.

In regards to the CAL, the District Research Coordinator (DRC) maintains primary control of the follow-up and re-

FIGURE D-2

DATA COLLECTION FLOW


Identify Sample Schools
Identify Universe of 3rd and 4th grade homeroom teachers in sample schools
Administer Classroom Roster to homeroom teachers
Select Student Sample
Administer Classroom Activities Logs
Identify Title I Parents
Administer Parent Interviews
Administer SSRIF to homeroom teachers
Identify Universe of Compen-satory LA* and Math Specialists
Administer Instructional Schedule to all specialists in universe
Identify Regular and Compensatory Teachers/ Specialists linked to sample children
Administer Teacher/ Specialist Forms I, III, IV and IVA
Administer Principal Questinnaire
Identify Citizen Sample
Administer Citizen Telephone Survey
Identify PAC Sample
Administer PAC interviews

*Language Arts

FIGURE D-3

START UP DATES FOR EACH INSTRUMENT BY SITE

Instrument	Site	Start-Up Date
Instructional Schedules	Berkeley, Freeport, Newport, Santa Fe, Wichita	February 4
	Adams, Harrison, Racine, Winston-Salem	February 5
	Mesa	February 13
	Oklahoma City, Charlotte	February 20
	Boston	February 23
	Alum Rock	February 26
	Houston, Yonkers	March 9
Classroom Rosters	Adams, Berkeley, Freeport, Newport, Santa Fe	February 7
	Harrison, Racine, Wichita, Winston-Salem	February 9
	Mesa	February 13
	Oklahoma City, Charlotte	February 20
	Boston	February 23
	Alum Rock	February 26
	Houston	March 8
Classroom Activities Log	Santa Fe, Freeport, Berkeley, Harrison, Racine	March 21
	Mesa, Winston-Salem, Charlotte, Oklahoma City, Newport	March 28
	Adams, Wichita, Yonkers	April 4
	Alum Rock, Houston	April 11
	Boston	April 18

FIGURE D-3a

START UP DATES FOR EACH INSTRUMENT BY SITE
(continued)

Instrument	Site	Start-Up Date
Principals	Alum Rock, Adams Co, Newport, Berkeley, Harrison	March 21
	Charlotte, Winston-Salem Santa Fe, Freeport, Yonkers, Racine	March 28
	Mesa, Wichita, Boston Oklahoma City, Houston	April 4
Student School Record Information Form; Teacher/ Specialist Form I and Modules	Mesa, Wichita, Santa Fe, Oklahoma City	April 25
	Alum Rock, Racine, Charlotte, Winston-Salem	May 9
	Adams, Houston, Berkeley, Harrison	May 2
	Boston, Freeport, Yonkers, Newport	May 16
Parent Interview	All Sites	May 2 (Dependent upon OMB clearance)
Citizens Telephone Survey	All Sites	As soon as the instrument receives OMB clearance
PAC Interview	All Sites	May 1 (Dependent upon OMB clearance)

turn of instruments. Teachers receive CAL packages from the AAI mailing operation. Then the DRC performs the following tasks:

- Assists teachers by handling problems and supplying supplementary information, e.g., alternative student names.;
- Edits completed CALS for problem fields;
- Follows-up non-respondents; and
- Mails completed protocols back to Abt Associates.

Before mailing questionnaires, AAI sends copies of all instruments to the LEA, SEA, and DRC. Principals of sampled schools also receive copies of questionnaires for their general information and assistance in dealing with problems that their staff may encounter.

In certain sites[1] instruments are distributed to respondents through the district Title I office. This procedure allows the district staff to attach a personalized cover letter to each instrument.

1.2.2 Telephone and Personal Interviews

During the spring the technical and field staffs will collect data from parents of Title I students, designated members of PACs, and citizens in general. The responsibilities of the staff will include:

- Selection and training of interviewers skilled in the administration of face-to-face and telephone interviews;

- Distribution of interviews to be used within each of the sixteen districts;

- Scheduling of interviews;

- Coordination and supervision of district interviewers; and

- Checking in, validating, cleaning, editing, coding, keypunching and entering data into the computerized data base.

---

[1] Racine, Yonkers, Adams County

2.0 QUALITY CONTROL PROCEDURES

The final phase of our data collection procedures begins when completed interviews arrive at AAI. The process involves editing, encoding interviews, ensuring data security/confidentiality, and updating and cleaning of the data base (as described in Appendix E of this report).

2.1 Receipt Control

All completed instruments received from sites are checked in through our receipt control operation and recorded on a cumulative daily tally sheet. A high level of control and supervision is maintained throughout the process to increase operational efficiency and eliminate potential sources of errors in reporting.

To monitor returns of instruments, the receipt control operation logs ID numbers of returned instruments on coding sheets. This information is used to update the data base, and generate non-respondent lists.

All information generated by the receipt control group is distributed to field and analysis staff members so that timely follow up of non-respondents and incomplete instruments/data can be instituted.

2.2 Editing the Returned Interviews

Editing is the joint responsibility of the District Research Coordinator (DRC) and AAI staff. Immediately after interviews are received at AAI, they are logged in and each instrument is edited using a standard set of rules. This is done by checking all interviews for complete responses, overall consistency, and errors of logic.

Some errors can be easily corrected by the editors in their initial check. Others warrant contacting the appropriate DRC. In the latter situation, the Abt monitor contacts the DRC and describes what information is needed. The responsibility of the DRC is to supply the necessary information to AAI as soon as possible.

Following the editing and retrieval of missing or incomplete data, instruments are encoded.

2.3 Encoding the Edited Instruments

Since instrument protocols are pre-coded, the coding effort is minimal. All questionnaires, however, are manually coded in preparation for the data processing phase. A supervisor is assigned to the project to maintain quality coding and to prepare all necessary coding manuals. The manuals provide general instructions for dealing with new codes and problems. Coding manuals serve as a guide to both editing and coding staff. They also provide documentation to facilitate the tasks of data processing and analysis.

Under the direction of a member of the analysis team, the coding supervisor trains coders in the purposes of the survey and the intent of each question. For open-ended questions, a random sampling of the responses is made to determine a range of answers for the particular question. Based on this sampling, codes are constructed and submitted to the analysis team to insure that the code categories meet their needs.

As with every other step in the process of data handling, quality checks are made by the coding supervisor and members of the analysis staff to insure that no errors or inconsistencies are found. Questions or problems on the part of the coder are reviewed daily by the coding supervisor.

After the instruments have been encoded and all quality control procedures have been completed, they are forwarded to keypunch.[2]

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[2] The Classroom Roster and Classroom Activities Log (CAL) are machine readable forms which are optically scanned.

Instruments are keypunched onto standard computer cards. All cards undergo 100 percent verification to eliminate any keypunch errors. Computer cleaning of all data cards serves as a final quality check before data are entered into the data base.

3.0 SECURITY AND CONFIDENTIALITY

In order to maintain the security and confidentiality of all information collected for this study the following controls and procedures have been instituted:

- Once they have been received, cover sheets of original documents which contain names and addresses and other identifying information of respondents are separated from the body of the questionnaire and stored under lock and key until the end of the contract, at which time they will be destroyed.
- The computerized data base is also accessible only to authorized personnel. The names and addresses of respondents will be used only for scheduling additional data collection efforts. At no other time will respondents be personally identified.
- An ID system has been established which references the district, school, grade, class, and child; however, it will not be possible during the analysis phase of the contract, to ever examine what a particular respondent said in a questionnaire. The data base delivered to NIE at the conclusion of the contract will be stripped of all ID information, to ensure personal anonymity.

In addition to these in-house security and confidentiality measures, confidentiality statements are included in mailings to potential respondents to reassure them of the efforts to prevent non-disclosure of their privileged information. Letters to be inserted in the individual student's school file are provided so that participation in the research will be permanently recorded.

APPENDIX E

DATA BASE ORGANIZATION

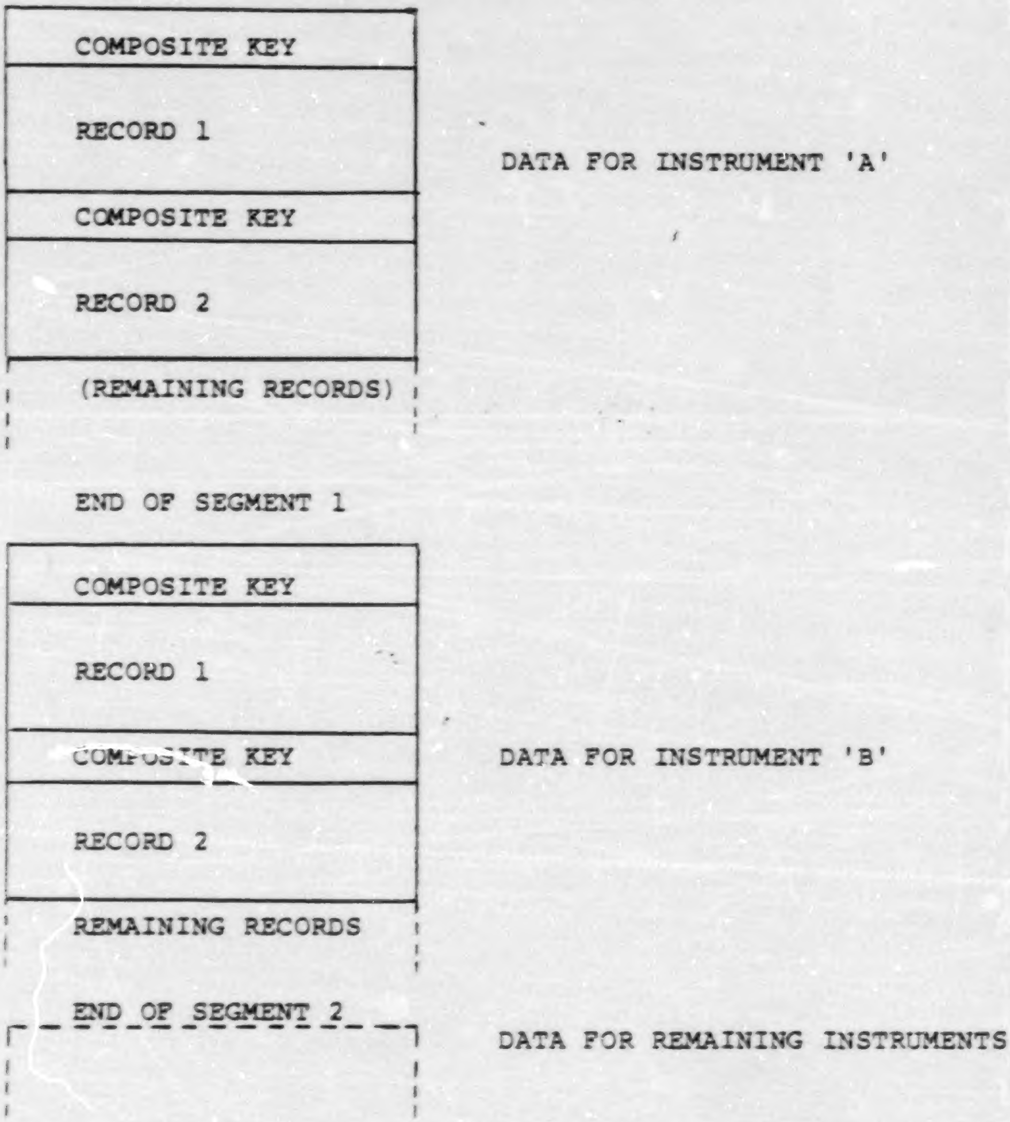
1.0 DATA BASE STRUCTURE

The data for the Demonstration study will be organized as a hierarchically structured data base, partitioned into segments, each of which contains data for a single instrument. Within each segment, information will be stored as coded records, (one record per case), each of which contains a fixed number of card images. Within each segment each record will begin with a composite key which will serve not only to uniquely identify the individual record but also to provide the means for simultaneous access of related data from different instruments. (See Figure E-1.) This organization will allow efficient access to data while still retaining information in compact form.

The representation of the information in the data base will be similar to the form in which it was originally coded, and addition of new data will be accomplished in a simple and straightforward manner. Within individual segments in the data base, records will be organized sequentially with their keys in ascending order. Data will be stored in display code, a 6-bit representation of the 026 character set. A one-to-one correspondence between the codebook for an instrument and the structure of the record in the data base will be preserved. Extraction of information from the data base will be done by an efficient user-oriented program which allows selection of desired records and specified data within these records from a segment. The resultant analytic output will be formatted in a manner suitable for direct input into SPPS or other statistical packages of choice.

FIGURE E-1

OVERALL STRUCTURE OF THE DATA BASE


COMPOSITE KEY
RECORD 1
DATA FOR INSTRUMENT 'A'
COMPOSITE KEY
RECORD 2
(REMAINING RECORDS)
END OF SEGMENT 1
COMPOSITE KEY
RECORD 1
COMPOSITE KEY
DATA FOR INSTRUMENT 'B'
RECORD 2
REMAINING RECORDS
END OF SEGMENT 2
DATA FOR REMAINING INSTRUMENTS

2.0 VARIABLE NAMING CONVENTIONS

All information in the data base will be described using Information Reference Coding, a technique in which the variable name contains within it all necessary information required for data extraction. All variables in the data base will be referenced by a 7-character I.D. formed from the following components:

- A single alphabetic character designating the instrument (See Figure E-2);
- A three-digit decimal number denoting the starting character within the record;
- A colon (required); and
- A two-digit decimal number denoting the width of the field.

Figure E-3 illustrates the use of this convention.

Using this strategem, variable lists may be constructed for an instrument using only the information provided in the codebook for that instrument. Since these variable lists are suitable for retention in resultant analytic files, the variable names continue to be associated with the data throughout the analysis. This provides an added check against errors caused by inadvertant confusion of variables.

FIGURE E-2

ALPHABETIC CHARACTERS FOR EACH INSTRUMENT AND COMPOSITE KEYS FOR EACH SEGMENT IN THE DATA BASE

INSTRUMENT	ALPHABETIC DESIGNATOR	COMPOSITE KEY				
1. Principal Form I	A	DST	SCH			
2. Title I Supplement	B	DST	SCH			
3. State Supplement	C	DST	SCH			
4. Class Roster	D	DST	SCH	GRD	CLS	
5. SSIRF	E	DST	SCH	GRD	CLS	SID
6. CAL	F	DST	SCH	GRD	CLS	SID
7. Parent Interview	G	DST	SCH	GRD	CLS	SID
8. Teacher/Specialist Form I	H	DST	TSD			
9. Regular Program Description Modules Form IV IV A	I	DST	TSD	RPD		
10. Compensatory Program Description Modules	J	DST	TSD	CPD		
11. Instructional Schedule	K	DST	TSD			
12. Citizen Survey	L	DST	CID			
13. PAC Interview	M	DST	SCH			

FIGURE E-3

ILLUSTRATIVE EXAMPLE OF INFORMATION REFERENCE CODING FOR A VARIABLE FROM THE CLASSROOM ROSTER WHICH STARTS IN CHARACTER 206 AND IS 6 DIGITS IN WIDTH (D206:06)

D	Instrument Identifier
2 0 6	Starting Character in Record
:	A Colon (Always Present)
0 6	Width of Field

FIGURE E-5

MATRIX OF LINKS DIRECTLY AVAILABLE ACROSS SEGMENTS OF THE DATA BASE*

INSTRUMENTS	CONSTRUCTS												
	District	School	Class	SSRIF	CAL	Parent	Teach/Spec. Background	Reg. Prog. Description	Comp. Prog. Description	Instruc. Schedule	Citizen Survey	PAC	Funding Program
Principal	X	I											
Class Roster	X	X	I										
SSRIF	X	X	X	I	I	I	X	X	X				
CAL	X	X	X	I	I	I							
Parent Interview	X	X	X	I	I	I							
Teach/Spec. Background	X	X**					I						
Reg. Prog. Description	X						X	I					
Comp. Prog. Description	X						X		I				X
Instructional Schedule	X						I***			I			X
Citizen Survey	X										I		
PAC	X	X										I	

*This matrix describes the links directly available through the use of basic keys or through variables corresponding to these basic keys. An "X" indicates that the instrument/segment on the left provides a direct link to the construct listed across the top; "I" indicates that the composite key is identical.

**For teachers only

***For specialists only

3.0 FILE LINKAGE

Linkage of files will be handled in one of two ways. Most links will be made through the use of basic keys associated with each data record. (See Figure E-4.) For each instrument, there will exist a subset of basic keys, which, when specified, will uniquely select a record from the segment corresponding to that instrument. The composite key at the beginning of each record in the data base will be formed by juxtaposing all basic keys applicable to the instrument in question. Information necessary to select corresponding records from different instruments will be contained in the values of the composite keys.

For certain segments, there is no direct link possible through the use of keys. This is the case when one wishes to merge teacher/specialist background forms or program description forms with information about individual students. In such instances, variables will be included as part of each student record which provide links to the keys of the other segments of interest. (For example, the student record form segment will contain variables showing the I.D. numbers of all the teachers and specialists providing services to each student.) Figure E-5 shows all the links that will be available by using either 1) the basic keys or 2) linking variables provided on each record.

Linkage of records will be a two-step process in which segments of the data base are first written out on a random file and then merged with corresponding records during the final pass.

FIGURE E-4

BASIC KEYS FOR RECORDS IN THE DATA BASE

NAME	ABBREVIATION	WIDTH (CHARS)
1. District	DST	2
2. School	SCH	3
3. Grade	GRD	1
4. Class	CLS	2
5. Student ID	SID	2
6. Teacher/Specialist ID	TSD	5
7. Regular Program Description	RPD	4
8. Compensatory Program Description	CPD	4
9. Citizen ID	CID	4

4.0 DATA BASE CONSTRUCTION AND MANAGEMENT

For each instrument we will determine valid ranges for all variables, specifications for all skips based on "flag" variables, and logic checks involving important variables. Forms completed in an inadequate or inconsistent manner will be identified and problems resolved by Cambridge staff or through DRC followup as necessary.

5.0 EXTRACTION OF ANALYTIC FILES

Creation of analytic files from the data base will be done by a flexible extraction program. In addition to providing for extraction of specified variables and linkage between segments, this program will also allow the user to select certain records for output based upon a complex criterion. Input to this program is simple in format and consists of the following two items:

1. A variable list consisting of the 7-character variable names described previously.
2. (Optional) A criterion for selecting records from the data base in the form of a boolean (logical) expression involving variables from the variable list; operators such as EQ, NE, LT, GT, and OR; plus constants. For example, we can select only those records for which the value of the variable D206:6 is greater than 5, by D206:06.GT.5.

Output will be produced in binary form (either real or integer) together with all necessary cards for direct input of the extracted file into SPSS (or another statistical package).

APPENDIX F

ASSESSING THE RELIABILITY OF THE CLASSROOM ACTIVITIES LOG (CAL)

1.0 INTRODUCTION

The Classroom Activities Log (CAL) will be used in each of the participating districts to obtain a complete description of the experiences of selected students on an average school day. (See Chapter 8.0 for more detail.)

When similar information has been sought in previous research, some variation of a classroom observation procedure employing a non-participant observer has been used to record student experiences. The scale of the present study (with the student sample approximately 6,000) and the necessity for observing students for an entire school day, precluded the use of such a labor-intensive procedure in this research. Instead, we are asking the regular classroom teachers to observe and record the experiences of students.

Since this approach is highly innovative, we have gathered information on the reliability of the instrument. This Appendix discusses our approach to assessing reliability, including past efforts and current plans.

2.0 SUMMARY OF PAST EFFORTS TO ASSESS RELIABILITY

During the instrument development period, a number of small scale field trials were conducted, including a pilot test. The results of the pilot test were reported to NIE on December 19, 1975. The primary purpose of these early efforts was to determine the suitability of the instrument for use in various classroom settings. Based on the results of these trials, modifications were made in the format of the instrument, its context, and the directions for using it. Results of the pilot test indicated that teachers were capable of recording the experiences of their students, even though the level of inference required was somewhat high.

Subsequently, a larger field test of the instrument was conducted. In this test, teachers and District Research Coordinators (DRCs) from each of the sixteen Demonstration districts completed CALs for four students who were randomly selected from one Title I and one non-Title I school within the district. When the CALs completed by teachers of the selected students and the DRC were compared, the agreement between "observers", averaged over the entire school day, was found to be approximately 75% for all dimensions of the CAL except "Adult Involved Directly in Teaching Student." Given the stringency of the test employed,[1] these results are highly significant. Based on the revisions which emanated from this pilot test, it is expected that an even greater agreement among observers will be found, particularly on the Adult Involved dimension. The procedures to be followed in the determination of this level of agreement as well as other estimates of reliability, ascertained across all sixteen districts, are described in the remainder of this Appendix.

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[1] For each student, CAL entries from both the teachers and the DRCs were compared for each interval recorded during the instructional day. Agreement was defined as the selection of exactly the same category for each dimension of the CAL (e.g., the language arts category of the Content Area dimension) for each ten minute time period. The percentages reported represent the average agreement among all teachers (n=64) and all DRCs (n=16) for the 64 students "observed". (Each DRC rated four students in his/her district.)

3.0 CURRENT PLANS TO ESTIMATE RELIABILITY

All reliability estimates will take the form of inter-observer agreements for two important reasons. First, one of the major issues to be addressed is whether a classroom teacher can accurately complete the CAL given the nature of the instrument and the other activities required of her/him during the average school day. Since a non-participant observer would not be involved in instruction and could therefore devote her/his full attention to monitoring the activities of the selected students, the best measure of the accuracy of teachers would be to compare their observations with those of a well-trained, non-participant observer (the DRC). Second, other classical procedures for assessing the reliability of an instrument are not appropriate, primarily due to the nature of the event(s) being observed. In particular, since each school day is a unique experience and since each portion of the day is likewise unique calculation of internal consistency or test-re-test coefficients to estimate reliability would be inappropriate.

During the months of April and May, 1976, data to be used in estimating the reliability of the CAL will be collected from nine students in each of the sixteen districts. These students will be selected randomly in three stages. First, nine schools will be chosen; then one third or fourth grade classroom from each school will be selected; and finally one student from each selected classroom will be selected.[2] On a designated observation day, (also chosen at random), the DRC and the teacher of the selected student will complete a Classroom Activities Log for that student. In all, CALs for 144 students will be completed. Since CALs for only nine students will be completed within a given district, no reliability estimates will be made at the site level. However, reliability will be determined for selected sub-groups of teachers, e.g., Title I versus non-Title I teachers, third grade versus fourth grade teachers, and so forth.

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[2] In those districts where there are fewer than nine schools, more than one classroom will be selected from a given school for purposes of the reliability study.

Given data from classroom teachers and DRCs on the same third and fourth grade students, two related methods of analysis will be used to assess the reliability of the CAL. These methods, both of which are based on comparisons of DRC and teacher CALs for the same student, are as follows:

1. Percent agreement per dimension of the CAL

   This method has been described in footnote one of this Appendix. Using this approach, each CAL entry made by the teacher and DRC for a given student will be compared by dimension across all ten-minute coding periods in the school day. The average Teacher-DRC agreement per dimension across the 144 students will provide the estimate of reliability. For example, if 40 out of 48 possible entries in the Content Area dimension were identical, the percent agreement between "observers" would be 83%. Averaging over all 144 students, the percent agreement might be 75%. The intuitive appeal of the percent-agreement approach and its general use in similar research are two strong arguments for its use in the reliability study.

2. Correlation among scores on variables of interest

   For the method described above, the exact time at which an "observation" is made is taken into account in the determination of reliability. Since the exact time at which an observation is made may not be important for analysis purposes, but rather the amount of instruction of various types received by students, correlation techniques will also be used to obtain estimates of reliability. In such instances, one computes the total score on a variable, e.g., the number of minutes in the school day devoted to instruction in Language Arts, for both the teacher and the DRC. These score pairs are then treated as data for the correlation analysis.

> Reliability estimates of this type will be provided for all CAL variables of interest, including, but not necessarily limited to, the following: time spent in each Content Area, time spent in Compensatory or Bilingual Instruction, time spent in instructional groups of various sizes, and amount of time various types of adults are involved in instruction. In addition to these single dimension variables, other variables can be generated by crossing variables from two or more dimensions of the CAL. The reliability of the CAL for these "crossed" variables will also be determined using the correlation approach. Such variables might include: the amount of Language Arts instruction delivered by Instructional Specialists, the amount of individualized instruction in mathematics received by students, and the amount of Bilingual Instruction in selected Content Areas delivered by a Paid Aide.

Since the second procedure focuses on the variables of interest in this research, this is viewed as the most important determinant of the reliability of the CAL. Since increases or decreases in the estimates of reliability for variables of interest should be associated with "time-related" agreement among "observers", results of both approaches will be presented.